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Service Recovery: Trend, Path Model, and Cultural Comparison

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SERVICE RECOVERY: TREND, PATH MODEL, AND CULTURAL COMPARISON

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ABSTRACT

This dissertation studies the trend of service recovery practice over the past decade, establishes a service recovery model, and compares the cultural differences using it. Service recovery has been an important topic in service operations, but few studies discuss the changes of recovery practices over time and analyze their differences across countries. This dissertation consists of three essays. The first investigates the service recovery trends by comparing recovery practices in 2008 and in 2000. In 2008, successful recovery was found to have less impact on satisfaction and loyalty, and fair compensation has less chance of successful recovery. The second essay establishes a service recovery model based on justice theory and attempts to solve the service recovery paradox by separating process and outcome satisfaction. In addition, this model is used to conduct country comparisons between the US and Taiwan. While interactional justice and procedural justice are found to be the focus in Taiwan, cost and distributive justice are more important in the US. The third essay, a methodology note, investigates whether the results from 1- and 2-incident Critical Incident Technique processes are different. While the response rates and item completion rates are similar between the two processes, few variables have significant mean differences. Overall, this dissertation advances service recovery research in longitudinal, international, and methodological issues.

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INTRODUCTION

This dissertation aims to analyze the trends of service recovery practice over the past decade. In addition, it proposes a service recovery model based on Justice Theory and attempts to solve the service recovery paradox by separating process and outcome satisfaction. Conducting surveys in both the US and Taiwan, this model is analyzed using the datasets collected from both countries to investigate the cultural impact on the causal relationships in the model. This dissertation also includes a methodology note studying the results collected from both 1- and 2-incident Critical Incident Technique (CIT) processes. Thus, this dissertation advances of service recovery research in three dimensions, longitudinal, international, and methodological directions.

The US service industry has expanded quickly and globally over the last decade. Nondurable goods consumption (*e.g.,* food, energy) has increased from 1.68 trillion dollars in 1998 to 2.83 trillion dollars in 2007, while service consumption (e.g., transportation, medical care) has increased from 3.45 trillion dollars in 1998 to 5.79 trillion dollars in 2007 (Bureau of Economic Analysis, 2009). Since 2002, the industry has increased service exports through both majority-owned affiliates (*e.g.,* wholesale and retail trade) and cross-border trade (*e.g.,* travel, transportation, financial servce) in 6 consecutive years (Koncz & Flatness, 2008). This increase indicates that US international service companies should adjust their service practices to meet customer expectations in different countries. At the same time, US domestic service companies should also conduct their business to meet the standards set by customers from different countries.

The US has been ranked high in both international tourist arrivals and international tourism receipts (U.N. World Tourism Organization, 2008). These data illustrate the importance of conducting service research regarding time and cultural differences. However, little research has been conducted concerning service recovery in light of these issues.

This dissertation consists of three essays. Essay 1 focuses on the trend of service recovery practices between 2000 and 2008. Frohlich and Dixon (2006) proposed the importance of replicated studies; this study replicates one conducted by Miller, Craighead, and Karwan (2000). Based on the matrix established by Frohlich and Dixon (2006), the current study uses a similar method and similar data. Because the same survey questions used in 2000 are used in 2008, the results collected in this study can be reasonably compared with the results collected in 2000. This study can not only provide more evidence supporting the hypotheses proposed by Miller, Craighead, and Karwan (2000) but also investigate the changes of recovery practices over time. The results can provide companies with the customer perceptions of service recovery in recent years.

Essay 2 establishes a service recovery model based on Justice Theory and provides possible strategies for conducting service recovery paradox research by separating process and outcome satisfaction in the model. In addition, following the steps of group comparisons suggested by several researchers (Byrne, 2006; Rungtusanatham, Ng, Zhao, and Lee, 2008), this study compares the models fitted by both the US and Taiwan datasets. Given the global expansion in the service industry, understanding the

cultural impact on recovery practice is important. By comparing the models from these two countries, companies can reshape their practices accordingly.

Essay 3, a methodology note, investigates whether the results collected from 1- and 2-incident process in Critical Incident Technique (CIT) are different. In CIT process, respondents can be asked to provide one or more incidents. Although the 2-incident process has more statistical power in comparing these two incidents, it costs respondents more time. This study focuses on a CIT combination method, asking respondents to answer multiple-choice questions according to the incidents they provide. The answers to the multiple-choice questions, rather than the descriptions of incidents, are the focal point in the analysis. This essay can provide guidelines for researchers for selecting the number of incidents in their studies.

Although the three essays can be considered as individual studies, together they provide an overall understanding of service recovery issues. This dissertation will provide the reviews of service recovery and the changes of recovery practices over time. It also establishes a new theory of service recovery based on Justice Theory and a service recovery model suggesting the separation of process and outcome satisfaction. In addition, the comparisons of two countries provide a theoretical understanding of their respective customers, advancing cross-culture research. Last, the methodology note in this dissertation provides suggestions for selecting the number of incidents when conducting CIT, a popular methodology in service research.

Essay 1 Service Recovery: A Comparative View

Abstract:

This study replicates the service recovery study conducted by Miller, Craighead, and Karwan in 2000. The resulting data support the service framework proposed in 2000. Regressions were conducted to compare the 2000 and 2008 results, their analyses indicating a decreased impact of service recovery on satisfaction and loyalty. In addition, they also support that the attempt to solve the problem as well as the authority to solve it are important in the service recovery practice. Managerial suggestions and possible future research are provided at the end of this study.

1. Introduction

The United States service industry has grown over the past 10 years, increasing nondurable goods consumption (*e.g.*, food, energy) from 1.68 trillion dollars in 1998 to 2.83 trillion dollars in 2007. During the same period, service consumption (e.g., transportation, medical care) increased 68% from 3.45 trillion dollars in 1998 to 5.79 trillion dollars in 2007 (Bureau of Economic Analysis, 2009). Although service companies have encountered incredible increases in personal consumption, few studies have analyzed over-time changes in service practices (Hays and Hill, 2001, 2006a). Regarded as one of the most important service practices, service recovery has not been investigated over time to determine whether or not service companies have made improvements in service recovery. To explore this issue, the study reported here replicates the study conducted by Miller, Craighead, and Karwan in 2000.

Since Hart, Heskett, and Sasser (1990) published "The Profitable Art of Service Recovery," researchers have analyzed the benefits of service recovery, investigating practices that can convert complaining customers into loyal ones. Specifically, several studies have analyzed the antecedents of successful service recovery. Craighead, Karwan, and Miller (2004) studied the effects of both failure severity and customer loyalty on service recovery strategies, while Hays and Hill (2001; 2006a; 2006b) investigated service guarantees, which provide clear recovery goals to customers, thereby improving customer perceived service quality. Other studies considered the outcomes of successful service recovery, suggesting that service recovery benefits not only customers but also processes and employees (R. Johnston, 2005; R. Johnston and Michel, 2008). Service

recovery is not only important in the service industry but it can also influence the performance of service-oriented manufacturing companies (Oliveira and Roth, 2008).

Frohlich and Dixon (2006) argued that few studies in Operations Management focus on the replication of previous studies. Such research can not only provide both validation and advancement of current theory but also develop the knowledge foundation of a particular paradigm. In addition, replicated studies can generate important contributions by refuting or extending the original findings. The authors proposed four replication strategies depending on the similarity of data and the similarity of methods between the replicated and the original studies. This paper uses both data and methods similar to those used by Miller, Craighead, and Karwan (2000) to validate the service recovery framework proposed by that study as well as to investigate the changes in service recovery practices during the past decade.

By replicating the study conducted by Miller and her colleagues in 2000, this paper intends to answer the following research questions:

1. Do 2008 data support the service recovery framework proposed in 2000?
2. Are there any differences between the results from 2000 and 2008?
3. What are the possible reasons for any difference found?
4. What are the managerial insights and potential future research suggested by these differences?

This paper is developed as follows: First, a literature review discusses the service recovery framework proposed by Miller *et al.* (2000), and their hypotheses are listed. Next, the possible changes between 2000 and 2008 are discussed, and additional

hypotheses are developed to compare the two collections of data. Methodology and samples are described before the presentation and discussion of the survey results. Following the results, managerial recommendations, future research, and limitations conclude this paper.

2. Service Recovery Framework

Miller and her colleagues (2000) established a service recovery framework through literature reviews and empirical analyses. These authors proposed three phases in the service recovery process. The first phase, the pre-recovery phase, occurs after the service fails but before the service provider is aware of it. After the service provider knows of the failure, service recovery compensates customers in the immediate recovery phase. After the customers have received fair compensation, the third phase, the follow-up recovery phase, begins. Through these three phases, good service recovery practices lead to higher customer loyalty, satisfaction, and retention rates. Figure 1-1 illustrates the three phases including the factors in each. The following section discusses the current findings in each of the three phases as well as the results from good service recovery practices.

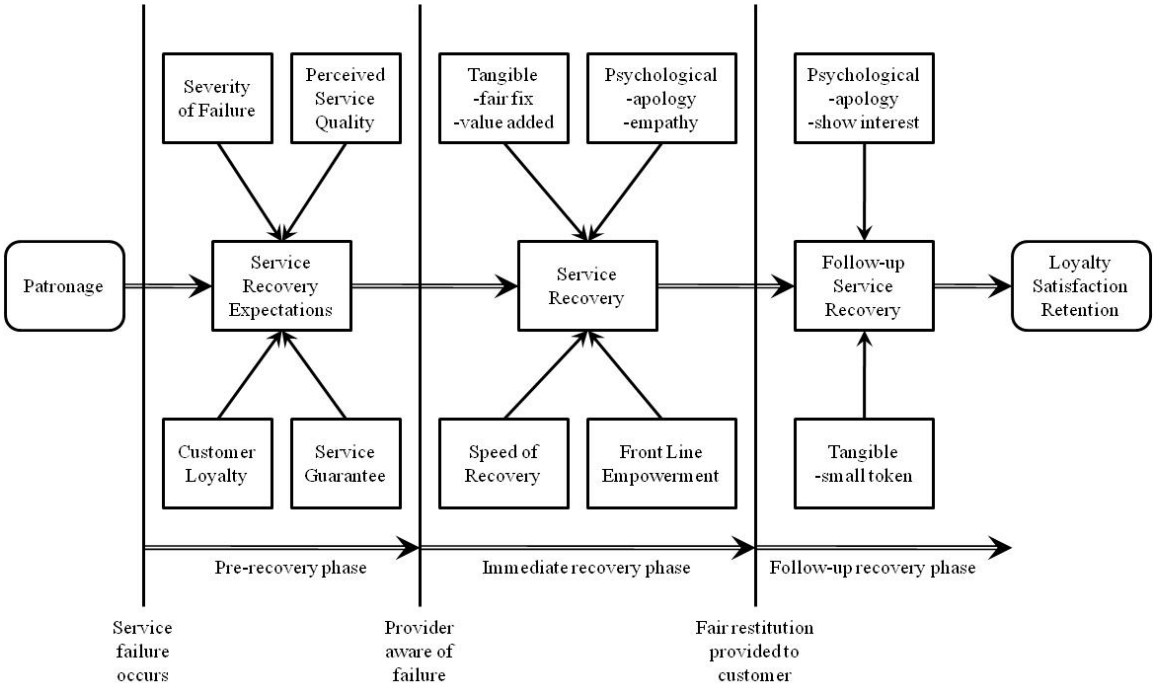

Figure 1-1: A Service Recovery Framework (Adopted from Miller et al., 2000)

2.1 Pre-Recovery Phase

The pre-recovery phase includes such factors influencing service recovery expectations as the severity of failure, pre-recovery loyalty, perceived past quality, and the existence of a service guarantee. Although Miller and her colleagues (2000) did not examine the relationships between these factors and recovery expectation, they found that those customers reporting successful recovery professed a higher loyalty to the company, had higher quality perceptions for the company, experienced less severe failures, and had service guarantees. In their investigation of the differences in recovery strategies based on customer loyalty and failure severity, Craighead and his colleagues (2004) found that companies should adopt different recovery practices depending on the levels of these two

factors. Vazquez-Casielles, del Rio-Lanza, and Diaz-Martin (2007) found that higher levels of perceived past quality had an indirect positive impact on recovery satisfaction. Applying service recovery concepts, Primo, Dooley, and Rungtusanatham (2007) analyzed supplier failures in a manufacturing environment, finding that both severity and loyalty were important factors influencing the recovery success of suppliers. Though few studies have examined the effects of service guarantees on recovery processes, researchers have found a significant relationship between the presence of service guarantees and service quality (Hays and Hill, 2001, 2006a, 2006b).

In addition to these four factors, a fifth, attribution, also plays an important role in service recovery expectations. Attribution represents to whom the customers think the failures are attributed. Choi and Mattila (2008) found that customers act negatively if they think failures are caused by service providers, while Vazquez-Casielles and her colleagues (2007) determined that less stable and less controllable attributions lead to higher overall satisfaction. In a manufacturing environment, manufacturer satisfaction decreased less after a service failure if it was not attributed to the supplier (Primo et al., 2007). These three studies suggest the importance of attribution during the pre-recovery phase.

2.2 Immediate Recovery Phase

Four factors, psychological efforts, tangible efforts, speed of recovery, and front line empowerment, influence service recovery in the immediate recovery phase. Miller and her colleagues (2000) found that three of the four, tangible efforts, speed of recovery,

and front line empowerment, had a positive influence on service recovery success. Customers encountering successful recovery are likely to obtain tangible results, experience faster recovery, and have the first contact person solve problems. Baker & Collier (2005) used the results from their investigation of fair fix and recovery speed to develop an economic payout model for managers to determine compensation for their unsatisfied customers. Although psychological efforts do not significantly influence recovery results, research has found that negative emotion can decrease customer satisfaction (Varela-Neira, Vazquez-Casielles, and Iglesias-Arguelles, 2008), suggesting this factor is important in reducing these bad feelings. While frontline worker empowerment has a positive impact on service recovery (R. Johnston and Fern, 1999; T. C. Johnston and Hewa, 1997), it can sometimes have a long term negative influence. Tucker (2004) found that if most operational failures are solved quickly by frontline employees but the underlying causes are not investigated or solved, the same or similar failures can occur over and over.

2.3 Follow-Up Recovery Phase

Few studies have analyzed the influence of follow-up activities on service recovery. Miller and her colleagues (2000) found that although follow-up activities were provided by companies in fewer than 10% of their sample, 78% of the cases in which follow-up recovery was employed were successfully resolved. Primo and his colleagues (2007) found that recurring supply failures can significantly decrease manufacturer satisfaction. Employing follow-up activities as part of recovery practices should be the

best way to find recurring problems and eliminate them, meaning these activities may increase customer satisfaction with service recovery through avoiding recurring failures.

2.4 The Results of Good Service Recovery

Several studies have found that good service recovery practices can lead to higher loyalty, satisfaction, and retention rates (de Jong and de Ruyter, 2004; R. Johnston and Michel, 2008; Miller *et al.*, 2000). Johnston and Michel (2008) found that service recovery has a positive impact on process improvement as well as on employee attitude and retention. Other studies have found that good relationships between customers and service providers resulted after successful service recovery (Cheng, Chen, and Chang, 2008; Lin and Ding, 2006). Service recovery also represents an important factor in several areas, including operational risk control (Lewis, 2003), service delivery systems (Roth and Menor, 2003), electronic service (Shaw and Craighead, 2003), and quality performance (Prajogo and McDermott, 2008). These studies reinforce the importance of service recovery in service transactions.

2.5 Hypotheses

The five hypotheses that follow were established from the previous literature review. With the exception of Hypothesis 2 (e), all come from Miller et al. (2000), the study being replicated:

Hypothesis 1: Successfully resolved failures are related to recovery outcome measures as follows:

(a) Positively to loyalty

(b) Positively to satisfaction with the recovery process and outcome

(c) Positively to retention

Hypothesis 2: Successfully resolved service failures are related to recovery antecedents as follows:

(a) Negatively to severity (costliness, timeliness, inconvenience) of the problem

(b) Positively to pre-failure loyalty

(c) Positively to a service guarantee

(d) Positively to perceived service quality

(e) Differentially to how customers perceive the attribution of the failure

Hypothesis 3: Successful service recovery is related to the types of recovery activities as follows:

(a) Positively to tangible recovery activities

(b) Positively to psychological recovery activities

Hypothesis 4: Successful service recovery is related to the recovery phases as follows:

(a) Negatively to the length of the pre-recovery phase

(b) Negatively to the length of the immediate recovery phase

(c) Positively to the presence of follow-up recovery activities

Hypothesis 5: Successful service recovery is related to service recovery delivery factors as follows:

(a) Positively to the first person contacted attempting to solve the problem

(b) Positively to the first person contacted having the authority to solve the problem

(c) Differentially to how the company found out about the problem

3. Changes in Service Recovery Between 2000 and 2008

3.1 The Outcomes of Service Recovery

Since service recovery activities including apology, fair fix, and additional compensation are not difficult to apply in daily business settings, more companies should be implementing them in 2008 than when Miller and her colleagues published their study in 2000. Therefore, the first-mover advantage for companies implementing service recovery should have deteriorated over time as more companies adopted service recovery practice. In other words, service companies should benefit less from service recovery activities in 2008 as these activities have come to be expected by customers. As a result, successful recovery practices will have less impact on the desired outcomes. Hypotheses 6 (a), (b), (c), and (d) are listed below:

Hypothesis 6(a): Service recovery has a stronger positive impact on outcome satisfaction in 2000 than in 2008.

Hypothesis 6(b): Service recovery has a stronger positive impact on process satisfaction in 2000 than in 2008.

Hypothesis 6(c): Service recovery has a stronger positive impact on after-recovery

loyalty in 2000 than in 2008.

Hypothesis 6(d): Service recovery has a stronger positive impact on repurchase behavior in 2000 than in 2008.

3.2 Factors in the Pre-Recovery Phase

Three primary factors in the pre-recovery phase, before-recovery severity, before-failure loyalty, and before-failure perceived quality, are discussed in this section. Over time, customers have learned that companies are willing to provide compensation to those not satisfied with their service transactions, thereby making them more willing to ask for such compensation. In the current study, an increased number of customers are expected to ask for service recovery even though the failures they encounter are less serious. Thus, the impact of severity should decrease from 2000 to 2008. While loyalty can influence the expectation of service recovery (Kelley and Davis, 1994), the impact of before-failure loyalty on service recovery should not be different over time. Thus, in both 2000 and 2008 loyal customers should have a similar tendency to ask companies to solve their problems. In addition, perceived quality should have a similar impact on service recovery results in both the 2000 and 2008 surveys. Hypotheses 7 (a), (b), and (c) below reflect these expectations:

Hypothesis 7(a): The before-recovery severity of problem has a stronger negative impact on successful service recovery in 2000 than in 2008.

Hypothesis 7(b): The before-failure loyalty in 2000 and in 2008 have a similar impact on successful service recovery.

Hypothesis 7(c): The before-failure perceived quality in 2000 and in 2008 have a similar impact on successful service recovery.

3.3 Factors in the Immediate Recovery Phase

The three primary factors considered in the immediate recovery phase in this study include the recovery activities, the first person contacted, and the after-recovery severity. Since the primary recovery activities of apology and fair fix are not difficult to apply in most businesses, an increasing number of companies employ service recovery in their daily standard processes. Because of this trend, the impact of apology and fair fix on successful service recovery should be less in 2008 than in 2000. A similar situation should also be found for extra compensation; however, because of the small number of cases providing extra compensation, this hypothesis cannot be tested. Hypotheses 8(a) and (b) are listed below:

Hypothesis 8(a): The apology recovery activity has a stronger positive impact on successful service recovery in 2000 than in 2008.

Hypothesis 8(b): The fair fix recovery activity has a stronger positive impact on successful service recovery in 2000 than in 2008.

As research determines important service recovery factors, companies should be aware of the importance of the front-line employees, training and empowering them to solve customer problems. When more problems are solved at the scene, customers should be more satisfied with the service recovery. However, recently an increasing number of companies have established customer service departments to handle customer complaints

(Michel, Bowen, and Johnston, 2008). Since customers may have to report problems to these service representatives instead of front-line employees, their complaints may not be solved at the scene, and customers might be less satisfied. These two trends have an opposite impact on customer satisfaction and the effects might offset each other. So hypotheses 9 (a), (b), and (c) are proposed below.

Hypothesis 9(a): The front-line employees' attempts to solve the problems have a similar positive impact on successful service recovery in 2000 and in 2008.

Hypothesis 9(b): The front-line employees' authority to solve the problems has a similar positive impact on successful service recovery in 2000 and in 2008.

Hypothesis 9(c): The first person contacted actually solving the problem will have a similar positive impact on successful service recovery in 2000 and in 2008.

After-recovery severity is the last factor studied here. First, when many companies use similar recovery activities to solve their problems, the variation in after-recovery severity should decrease over time. Second, as discussed previously, more customers will complain about their problems even if those they encounter are not very serious, also suggesting the variation in the after-recovery severity should decrease. Based on this analysis, the impact of after-recovery severity on successful service recovery should decrease between 2000 and 2008. Thus, Hypotheses 10 is proposed:

Hypothesis 10: The after-recovery severity of problem has a stronger negative impact on successful service recovery in 2000 than in 2008.

4. Methodology and Results

4.1 Critical Incident Technique and the Sample

The Critical Incident Technique (CIT), first developed by Flanagan (1954), was used to investigate the research questions in the study reported here. According to Gremler (2004), CIT is an appropriate methodology for the study like this one investigating service recovery issues. Undergraduate students from a public university in the Southeastern United States were recruited to serve as participants (2000 and 2008) in this study for three reasons. First, service studies frequently sample from a student population (Hui, Au, and Fock, 2004; Liu, Furrer, and Sudharshan, 2001; Patterson, Cowley, and Prasongsukarn, 2006; Patterson and Smith, 2003) because students purchase services every day just as other customers do. Second, this study replicates the study conducted by Miller and her colleagues (2000) which used students as the primary respondents. This replication, then, falls into the similar-method, similar-data quadrant of the methods of replication as developed by Frohlich and Dixon (2006).. Third, using a similar sample pool reduces the variation resulting from respondents when comparing the results from the 2000 and 2008 surveys. Because this is a similar-method replication, the questionnaire used was also based on Miller et al. (2000). All questions were placed on a website to not only tailor the survey questions but also facilitate survey distribution (Dillman, 2007).

4.2 Process of Analysis

The analysis of this study used the same method, tests between proportions, as Miller et al. (2000) used in their study. Basically, the numbers of the various responses for each question under successful and unsuccessful recovery situations were counted. The proportions were obtained by dividing these by the total number of recovery incidents (both successful and unsuccessful). Using the following formula, Z tests were conducted to investigate the differences between two proportions (Hicks and Turner Jr., 1999, p. 43). This formula was set up in an Excel worksheet to calculate the z scores and p-values. Significance is indicated in the result tables.

$$Z = \left(\frac{Y_1}{n_1} - \frac{Y_2}{n_2}\right) \Big/ \sqrt{\left(\frac{Y_1 + Y_2}{n_1 + n_2}\right)\left(1 - \frac{Y_1 + Y_2}{n_1 + n_2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

where

Y_1 and Y_2 are the numbers of certain responses from successful and unsuccessful recovery

n_1 and n_2 are the total numbers of successful and unsuccessful recovery

Multiple and logistic regression were used to compare the results from the years 2000 and 2008. Both regressions were analyzed via SPSS Statistics Gradpack 17. To investigate the service recovery outcomes, including repurchase behavior, process and outcome satisfaction, and after-recovery loyalty, four hierarchical multiple regressions with recovery outcomes as the dependent variable in each regression model were used. The first model for each regression had year and recovery success as the independent variables. Next, the interaction term of year and recovery success was added as the third

independent variable to test the significance of the interaction term. All four multiple regressions are expressed as the following equations, where C_1, C_2, and C_3 are constant:

$$Model\ 1: Outcome = Constant + C_1 * Year + C_2 * (Recovery\ Success)$$

$$Model\ 2: Outcome = Constant + C_1 * Year + C_2 * (Recovery\ Success) + C_3 * (Year\ by\ Recovery\ Success)$$

Logistic regression was used to investigate the impact of the factors, severity, loyalty, and recovery activities, on recovery success. The primary reason for using this regression is the dichotomous nature of the recovery variable, which has only two values: 1 for satisfied or successful recovery and 0 for dissatisfied or unsuccessful recovery. Because of the similarity of the factors influencing successful recovery, the factors were tested in groups. The logistic regressions were conducted based on the methodology developed by Cohen, Cohen, West, and Aiken (2003).

To illustrate the process of logistic regressions, a model is assumed to be interested in two main effects in addition to the differences between two years (2000 and 2008), meaning "year" becomes the third independent variable. First, all main effects are entered into the logistic regression model as expressed below. This model was tested for significance and then used as the base model to test the individual main effects.

Base model:

$$\ln(Successful\ Recovery) = C_1(main\ effect)_1 + C_2(main\ effect)_2 + C_3 Year + Constant$$

To test the individual main effects, the likelihood ratio tests described by Cohen and his colleagues (2003) were used instead of the Wald tests. Likelihood tests compared

the deviations between the full model described above and the model without the main effect being tested. For example, to test main effect 1, the χ^2 value of the model above (base model) and the χ^2 value of the model below were calculated. The difference between the two χ^2 values was tested with one degree of freedom to see whether this main effect significantly contributed to the model tested here.

Model for testing main effect 1:

$$\ln(Successful\ Recovery) = C_2(main\ effect)_2 + C_3 Year + Constant$$

After testing all of the individual main effects, the interaction terms of the main effects with the year dummy variable were tested. Similar to the test for the main effects, the χ^2 values calculated from the base model and the interaction model were compared. For example, to test the interaction term of main effect one and year, the χ^2 values from the following models were compared to test whether the interaction term was significant. The significance of the interaction terms was used to decide whether Hypotheses 6 to 10 are supported.

Base model:

$$ln(Successful\ Recovery) = C_1(main\ effect)_1 + C_2(main\ effect)_2 + C_3 Year + Constant$$

Interaction model:

$$ln(Successful\ Recovery) = C_1(main\ effect)_1 + C_2(main\ effect)_2 + C_3 Year + C_4[(main\ effect)_1 \times year] + Constant$$

When the interaction term in this model was significant, the model tested here was exemplified using the following two equations, called logit and odds equations, which express the same equation in different ways. While the logit equation is what the software uses to perform the logistic regression, the odds equation is easier to interpret.

$$Logit\ Equation:\ ln(Successful\ Recovery)$$

$$= C_1(main\ effect)_1 + C_2(main\ effect)_2 + C_3 Year$$

$$+ C_4[(main\ effect)_1 \times year] + Constant$$

$$Odds\ Equation:\ Odds\ of\ Successful\ Recovery$$

$$= e^{C_1(main\ effect)_1} \times e^{C_2(main\ effect)_2} \times e^{C_3 Year}$$

$$\times e^{C_4[(main\ effect)_1 \times year]} \times e^{Constant}$$

4.3 Results

The total number of responses collected for the 2008 survey was 131, a response rate of approximately 74.9%. Checking the consistency between two questions, Q1 and Q27, resulted in 105 usable responses from the sample. The demographic information of the respondents is listed in Table 1-1. The sample includes 37% female, 3% younger than 20 years old, 3% with less than 14 years of education, and 86% with some work experience.

Table 1-1: Demographic Information from Survey (Demographic Questions)

Demographics	**U.S. students**	**Demographics**	**U.S. students**
Female	37.0%	Education under 14 years	3.0%
Male	63.0%	Education 14 years and above	97.0%
Age under 20	3.0%	No job experience	14.0%
Age 20 and above	97.0%	Some job experiences	86.0%

Tables 1-2 to 1-6 show the replicated results from 2008. These tables have the same titles and use the same analysis methods as Miller et al. (2000). When significant, asterisks mark the larger percentages. For example, in Table 1-2 the two asterisks next to 65 indicates that 65 out of 67 is significantly larger than 19 out of 39 at $\alpha = 0.01$ level. All other asterisks can be interpreted in a similar way. Only two tables in the current study have additional rows from the 2000 study. In Table 1-4, four rows, "Quality," "Not quality," "Perceived quality provider before failure," and "The failures are caused by the companies," are added. While "Quality" totals "Reputation," "Personal experience with the company," and "Recommendation of friend/family member," "Not quality" sums "Advertisement/Sale" and "Convenience." The third row, "Perceived quality provider before failure," measures the perceived quality of the service provider before failure, and the fourth row, "The failures are caused by the companies," measures the perceived attribution of the failure. Table 1-6 has 2 additional rows, "Customer told company by email" and "Customer told company by company website," the new items collected in 2008 survey. Considering the popularity of personal computers and the Internet, adding these two items seemed necessary.

Tables 1-7 to 1-13 list the results from the regression analyses of comparing the 2000 and 2008 results. While Table 1-7 displays the results of hierarchical multiple regressions, the other tables show the results from logistic regressions. The columns in Table 1-7 indicate regression models having different dependent variables with the unstandardized coefficients. For Tables 1-8 to 1-13, each results from a single logistic

regression model. Each table has three columns, χ^2 values from the significant tests, the coefficients from the logit equation, and the odds ratio from the odds equation. While χ^2 values are used to evaluate the significance of the independent variables, odds ratios are used to interpret the model. Table 1-14 lists the pseudo r^2 values from the logistic regression models, and Tables 1-15 and 1-16 summarize the hypotheses discussed in this study.

5. Discussion

5.1 Replicating the Study Conducted by Miller et al. (2000)

This section discusses the 2008 results in relation to the hypotheses proposed by Miller and her colleagues (2000). Table 1-2 illustrates that successful recovery incidents result in a higher percentage in repurchase behavior, process and outcome satisfaction, as well as loyalty after recovery. These findings, which support Hypothesis 1, give service companies another strong signal about the importance of good recovery practices. Since companies cannot always conduct their business correctly and meet customer expectations in every transaction, they need to establish good recovery practices to convert complaining customers into loyal ones.

Table 1-2: The Importance of Service Recovery

	Problem solved (n = 67)	**Problem not solved (n = 38)**	**Total (n = 105)**
Customer retained (Q31)	65**	18	83
Customer satisfied with the recovery process (Q42)	49**	1	50
Customer satisfied with the recovery outcome (Q43)	56**	3	59
Customer loyalty after failure and recovery (Q44)	46**	5	51

* $p<0.05$ for test of difference in proportions within a row (e.g., 65/67 compared to 18/38).
** $p<0.01$ for test of difference in proportions within a row.

Table 1-3 shows that Hypothesis 2(a) is supported. Most customers in unsuccessful recovery incidents felt higher severity after recovery than customers in successful recovery incidents. However, the differences in perceived after-failure, before-recovery severities between successful and unsuccessful recovery incidents are significant only for overall severity, but not for before-recovery severity as measured by cost, time, or inconvenience. These findings suggest that companies should focus on after-recovery severity. Although the problem might be serious before recovery, customers can still appreciate successful recovery practices as long as the companies can reduce the severity through their use of recovery activities. However, the results in Table 1-3 do not support Hypothesis 2(b). Because the methodology used in this study excluded non-complaining customers, no customers who failed to inform the companies of the failure were sampled, and because these non-complaining customers were likely to be the least loyal, we found similar loyalty levels among the complaining customers. Instead of concluding that loyalty is not important to the recovery process, companies should remember that good recovery can create loyalty from both loyal and disloyal customers

and try to solve every failure whether or not customers were loyal to the companies before it. In 2008, most customers still were not aware of the service guarantees provided by service companies, with only 26 incidents among 105 total incidents (24.8%) recognizing these guarantees. However, among these 26 incidents, 17 (65.4%) were successfully recovered. The results on whether the perceived quality of the service companies influenced the results of service recovery can be seen in Table 1-4. As this table shows, all of the reasons for patronage, except "no other choice available," did not influence the results of service recovery. However, most customers encountering successful recovery processes regarded the companies as quality providers, suggesting the importance for service companies to establish themselves as quality providers. Thus, Hypothesis 2(d) is supported. Past studies have found that the attribution of the problems influence customer satisfaction (Vazquez-Casielles et al., 2007). However, this study did not find this relationship as shown in the last row of Table 1-4. The similar percentages in both the successful and unsuccessful columns suggest that Hypothesis 2(e) is not supported. Thus, companies should be able to solve problems successfully no matter who caused them.

Table 1-3: The Antecedents of Service Recovery Expectations

	Problem solved (n = 67)	**Problem not solved (n = 38)**	**Total (n = 105)**
Severity			
The problem could have been serious (Q10)	20	18*	38
The problem could have been costly (Q11)	25	19	44
The problem actually was costly (Q35)	6	13**	19
The problem could have been time (Q12)	37	26	63
The problem actually was time (Q37)	30	26**	56
The problem could have been inconvenient (Q13)	48	31	79
The problem actually was inconvenient (Q39)	25	27**	52
Loyalty			
Company used more than four times prior to failure (Q3)	36	19	55
Company used longer than 1 week prior to failure (Q4)	52	25	77
Customer loyalty prior to failure (Q5)	45	20	65

* $p<0.05$ for test of difference in proportions within a row (e.g., 20/67 compared to 18/38).
** $p<0.01$ for test of difference in proportions within a row.

Table 1-4: Reasons for Patronage and Perceived Quality before Failure (Q7)

	Problem solved (n = 67)	**Problem not solved (n = 38)**	**Total (n = 105)**
Reputation	12	6	18
Personal experience with the company	16	6	22
Recommendation of friend/family member	7	5	12
Quality	35	17	52
Advertisement/Sale	15	5	20
Convenience	11	8	19
Not quality	26	13	39
No other choices available	5	7*	12
Other	1	1	2
Perceived quality provider before failure (Q6)	51**	19	70
The failures are caused by the companies (Q47)	43	22	65

* $p<0.05$ for test of difference in proportions within a row (e.g., 12/67 compared to 6/38).
** $p<0.01$ for test of difference in proportions within a row.

Table 1-5 provides the information for investigating the effectiveness of recovery activities. When problems were not solved, most customers either did not receive any recovery activities or received only an apology. However, when customers received both an apology and a fair fix, they felt the problems were solved. This result is similar to that from the 2000 study. Companies need to provide both psychological (*e.g.,* apology) and tangible (*e.g.,* fair fix) recovery activities to solve problems successfully. While tangible recovery activities only (6 vs. 0 incidents) might be able to solve the problem, psychological activities alone will not. If the recovery activities went beyond the fair fix by giving a little extra compensation, the failures were most likely to be solved. However, this extra compensation is not necessary for a successful recovery as long as the companies can provide both psychological and fair recovery activities.

Table 1-5: Psychological and Tangible Service Recovery Activities (Q16, Q28, Q29, & Q30)

	Problem solved (n = 67)	**Problem not solved (n = 38)**	**Total (n = 105)**
No recovery activities	0	17**	17
Apology without a fair fix	7	14**	21
Fair fix without an apology	6*	0	6
Fair fix and value added without an apology	1	0	1
Apology and fair fix	32**	6	38
Apology, fair fix and value added	21**	1	22

* $p<0.05$ for test of difference in proportions within a row (e.g., 0/67 compared to 17/38).
** $p<0.01$ for test of difference in proportions within a row.

Table 1-6 provides the information for analyzing the influence of time, personnel, and contact issues. The results indicate that when the service recovery processes began and ended promptly, the problem was usually solved. However, whether the problem was

discovered within a day was not important to recovery practices. This situation is understandable because usually the length of the pre-recovery phase depends on how promptly the customer complains. Therefore, Hypothesis 4(a) is not supported, yet Hypothesis 4(b) is. Only 13 incidents described any post-recovery contacts, 9 of them were successfully recovered. Because the sample size is small, Hypothesis 4(c) is not conclusive. Thus, service companies should begin and end the recovery process as soon as possible to solve their failures successfully. In addition, the results in Table 1-6 support Hypotheses 5(a) and 5(b), but not Hypothesis 5(c). When the first person contacted attempted to solve the problem or had the authority to solve it, most of the failures were successfully resolved. Thus, service companies should provide their frontline employees with the authority needed to address and solve service failures. The lack of support for Hypothesis 5(c) suggests that companies do not have to worry whether they discover the failure before their customers do. If companies can solve problems when they are informed of them, they can still retain satisfied and loyal customers.

Table 1-6: Delivery Issues in Service Recovery

	Problem Solved (n = 67)	**Problem not Solved (n = 38)**	**Total (n = 105)**
Time Issue			
Problem discovered within a day (Q15)	42	28	70
Solution process starts within a day of finding out (Q19)	45**	14	59
Solution process is completed within a day (Q24)	34*	12	46
Personnel issues			
First contact with: (Q20)			
Manager	12	7	19
Owner	5	1	6
customer service	26	13	39
someone else	24	17	41
First person attempted to solve problem (Q21)	64**	23	87
First contact had authority to solve problem (Q22)	52**	21	73
First person was also last person dealt with (Q23)	33	16	49
First person was not last person dealt with	34	22	56
How the company discovered the problem (Q14)			
Company found the problem before the customer	11	4	15
Customer told company in writing	0	0	0
Customer told company in person	22	18	40
Customer told company by phone	29	12	41
Customer told company by email	5	2	7
Customer told company by company website	0	1	1

* $p<0.05$ for test of difference in proportions within a row (e.g., 42/67 compared to 28/38).
** $p<0.01$ for test of difference in proportions within a row.

5.2 The Comparisons Between the 2000 and 2008 Surveys

This section discusses the hypotheses related to the comparisons between the 2000 and 2008 surveys. Multiple and logistic regressions were used to conduct this

analysis. This section is divided into three sections: Service Recovery Outcomes, Pre-Recovery Phase Factors, and Immediate Recovery Phase Factors.

5.2.1 Service Recovery Outcomes

Table 1-7 on the investigation of service recovery outcomes indicates that all interaction terms between year and service recovery had a significant impact on all outcomes except repurchase behavior. These significant results support Hypotheses 6 (a), (b), and (c), but not Hypothesis 6(d). The model with outcome satisfaction as the dependent variable is interpreted here as an example. While in 2000, successful recovery increased the value of outcome satisfaction by 2.654 (*e.g.*, from approximately slightly dissatisfied to very satisfied), in 2008, successful recovery increased the value by only 1.654 (*e.g.*, from approximately slightly dissatisfied to satisfied). This value, 1.654, is calculated by deducting 1.000, which is the coefficient of the interaction term, from 2.654. Because the effects of service recovery are lower in 2008 than in 2000, it can be argued that service recovery has changed from an order winner to an order qualifier. Because of this change, the impact of successful service recovery on desirable outcomes (*i.e.*, process and outcome satisfaction as well as loyalty) has decreased.

Table 1-7: The Importance of Service Recovery

Dependent variables	**Outcome satisfaction**	**Process satisfaction**	**Loyalty**	**Repurchase**
Scale	1: very satisfied 5: very dissatisfied	1: very satisfied 5: very dissatisfied	1: strongly agree 5: strongly disagree	1: I already have gone back to the company 6: I am certain I will never return
Coefficients:				
(Constant)	1.66**	1.61**	1.77**	3.15**
Year (1: 2008; 0: 2000)	.85**	.72**	.73**	.19
Service recovery (1: successful; 0: unsuccessful)	2.65**	2.37**	1.99**	2.13**
Interaction between year and service recovery	-1.00**	-.82**	-.59**	-.42
r^2 *model without interaction term*	0.719**	0.653**	0.497**	0.340**
Δ r^2 *after interaction term*	0.010**	0.008**	0.004**	0.001
r^2	0.729	0.660	0.502	0.341
Adjusted r^2	0.728	0.659	0.500	0.339

* $p<0.05$; ** $p<0.01$

In addition to these results, it was also found that successful recovery activities explained more than 65% of the variance in satisfaction measures and that these activities explained approximately 50% of the variance in loyalty and less than 35% of the variance in repurchase behaviors. Since satisfaction measures in this study measured the satisfaction toward recovery activities, high r^2 values were expected. At the same time, a low r^2 value for the intent to repurchase suggests that repurchase behavior is influenced by variables other than recovery activities, thereby reducing the significance of the interaction term in this model. For example, if customers do not have other choices for similar services in an area, they must return to the same service providers even though

they were not satisfied with the recovery activities. This result is similar to the patronage results in Table 1-4.

5.2.2 Pre-Recovery Phase Factors

Next, successful service recovery was used as the dependent variable to conduct logistic regressions. Three factors, before-recovery severity, before-failure loyalty, and before-failure perceived quality, are discussed in this section. First, the before-recovery severity was analyzed. Table 1-8 indicates that all interaction terms were not significant in this model. Because of these non-significant interaction terms, Hypothesis 7(a) is not supported. However, the significance of year as well as the weak significance of before-recovery time and inconvenience needs further discussion. The significant impact of year on successful recovery is a result of the data collected in 2008 when more successful incidents were collected than unsuccessful ones. Thus, this result shows only the characteristics of the 2008 data and does not represent theoretical reasoning. The variable year is also significant in some of the following analyses, and the discussions are similar to these. Both time and inconvenience are significant at $\alpha = 0.1$, and before-recovery time is used as an example for interpretation. The significance of time suggests that when the value of customer perceived time increases by 1 unit, the odds of a successful recovery will be 0.88 to 1 or 1 to 1.14, when all other variables are kept constant. In other words, the success percentage of service recovery will decrease from 50% to 46.8% if the average perceived time increases by 1 unit. This result indicates that the chance to recover successfully from the failures increases if customers feel the recovery process is less time-consuming than what they thought it would be before the recovery. This result

also implies that customers might not complain if they think the recovery process will cost them a large amount of time. Thus, companies should try to minimize the time involved in the recovery process to increase their chance of a successful recovery.

Table 1-8: The Before-Recovery Severity Factors[a]

Independent variables (Nagelkerke r^2 = 0.039)	**χ2 values (significance test)**	**Logistic regression coefficients**	**Odds ratios**
Year (1: 2008; 0: 2000)	5.57*	.51*	1.67*
Before-recovery cost	1.60	-.08	.92
Before-recovery time	3.77[@]	-.13[@]	.88[@]
Before-recovery inconvenience	2.72[@]	-.15	.86
Interaction of year and cost	.94		
Interaction of year and time	.19		
Interaction of year and inconvenience	.01		
Constant		.08	1.08

[a]: Dependent variable is service recovery (1: successful; 0: unsuccessful); The scales for independent variables not mentioned in the table are from 1: strongly agree to 5: strongly disagree.
[@] p<0.1; * p<0.05; ** p<0.01

Next, the factors related to before-failure loyalty were analyzed. Three factors, "how many times used," "how long used," and "loyalty," were analyzed in this model with the results being found in Table 1-9. Again, all interaction terms were not significant in this model, indicating that Hypothesis 7(b) is supported. Without the interaction terms, it was found that both variables of year and before-failure loyalty have a significant impact on successful recovery (see Table 1-9). The value 0.655 indicates that when the value of customer before-failure loyalty increases by 1 unit, the odds of successfully recovering the failure will be 1.53 to 1, when all other variables are kept constant. In other words, the success percentage of the service recovery will increase from 50% to

60.5% if the average before-failure loyalty increases by 1 unit. When customers feel lower levels of loyalty before a service failure, the chance to recover the failure successfully decreases. Therefore, companies should build customer loyalty whether through programs such as frequent shopper awards or by other methods. With high levels of loyalty, companies have a better chance to resolve problems successfully.

Table 1-9: The Before-Failure Loyalty Factors[a]

Independent variables (Nagelkerke r^2 = 0.075)	**χ2 values (significance test)**	**Logistic regression coefficients**	**Odds ratios**
Year (1: 2008; 0: 2000)	5.29*	.50*	1.66*
Times use (1: 0 time; 6: 20 times or more)	.15	.02	1.02
Length use (1: The first time; 5: years)	.11	.02	1.02
Before-failure loyalty	28.39**	.42**	1.53**
Interaction of year and times	.35		
Interaction of year and length	.21		
Interaction of year and loyalty	.01		
Constant		.07	1.07

[a]: Dependent variable is service recovery (1: successful; 0: unsuccessful); The scales for independent variables not mentioned in the table are from 1: strongly agree to 5: strongly disagree.
[@] p<0.1; * p<0.05; ** p<0.01

Finally, customer perceived before-failure quality was analyzed. As Table 1-10 shows, the interaction term was not significant, supporting Hypothesis 7(c), while both year and before-failure perceived quality were significant. The odds ratio of before-failure perceived quality, 1.67, indicated that when the value of customer before-failure perceived quality increases by 1 unit, the odds of successfully recovering will be 1.67 to 1, when all other variables are kept constant. In other words, the success recovery percentage increases from 50% to 62.5% if the average perceived before-failure quality

increases by 1 unit. When customers perceive the company as a high quality provider, the chance for a successful recovery increases. Thus, service companies should establish themselves as quality service providers not only to decrease the chance of service failure but also to increase the chance of successful recovery.

Table 1-10: The Before-Failure Perceived Quality Factors[a]

Independent variables (Nagelkerke r^2 = 0.069)	**χ2 values (significance test)**	**Logistic regression coefficients**	**Odds ratios**
Year (1: 2008; 0: 2000)	7.30**	.66**	1.93**
Before-failure perceived quality	16.06**	.51**	1.67**
Interaction of year and quality	.95		
Constant		.04	1.04

[a]: Dependent variable is service recovery (1: successful; 0: unsuccessful); The scales for independent variables not mentioned in the table are from 1: strongly agree to 5: strongly disagree.
[@] p<0.1; * p<0.05; ** p<0.01

5.2.3 Immediate Recovery Phase Factors

In this section, the factors of recovery activities, first person related issues, and after-recovery severity are used to analyze the differences between the 2000 and 2008 surveys through logistic regressions. First, the impact of recovery activities on successful recovery was analyzed. Table 1-11 shows that the interaction of year and apology was not significant, while the interaction of year and fair fix was significant at $\alpha = 0.05$. Therefore, Hypothesis 8(a) is not supported, while Hypothesis 8(b) is supported. The odds ratio of the interaction between year and fair compensation, 0.36, indicates the odd ratio of fair compensation is 5.35 in 2008 down from 14.87 in 2000 as determined by multiplying 14.87 by 0.36. When the average customer perceived fairness of

compensation increases by 1 unit, the successful percentage of service recovery increases from 50% to 93.7% and 84.3% in 2000 and 2008, respectively. These results indicate fair compensation has less impact on successful recovery in 2008 than in 2000.

Table 1-11: The Recovery Activity Factors[a]

Independent variables (Nagelkerke r^2 = 0.862)	**χ2 values (significance test)**	**Logistic regression coefficients**	**Odds ratios**
Year (1: 2008; 0: 2000)	1.22	-.06	.94
Apology (1: yes; 0: no)	39.28**	1.97**	7.20**
Fair compensation	559.36**	2.70**	14.87**
Interaction of year and apology	1.43		
Interaction of year and fair	4.96*	-1.03*	.36*
Interaction of apology and fair	.01		
Constant		-1.58**	.21**

[a]: Dependent variable is service recovery (1: successful; 0: unsuccessful); The scales for independent variables not mentioned in the table are from 1: strongly agree to 5: strongly disagree.
[@] p<0.1; * p<0.05; ** p<0.01

Second, the factors related to first contact person were analyzed. According to Table 1-12, all interaction terms were not significant, indicating that Hypotheses 9 (a), (b), and (c) are supported. In addition, Table 1-12 indicates that the factor, the final contact person being the first contact person, was not significant. It is believed that the insignificant result from this situation is not related to whether the problems were successfully solved. For example, customers may find out that the problem could not be solved after contacting only one person. However, it is interesting that when the first contact person attempted to solve the problem, the problem was more likely to be solved, significant at $\alpha = 0.01$, while the first contact person having authority to solve the problem was only weakly and negatively related to successful recovery ($\alpha = 0.1$). To

understand the weak and negative significance of authority, the interaction between attempt and authority significant at $\alpha = 0.01$ needs to be considered. Here the weak and negative significance of authority is found when the first contact person did not attempt to solve the problem. Because of the interaction, authority has a significantly positive impact on recovery only if the first person contacted tried to solve the problem. This situation is understandable, showing the importance of attempting to solve the problem in service recovery. If the front-line employees did not attempt to solve the problem, their authority had a negative impact on successful recovery. However, if the front-line employees attempted to solve the problem, they probably showed empathy toward their customers, increasing the chance of a successful recovery. When the front-line employees both attempted to solve the problem and had the authority to do so, companies were much more likely to resolve the problems successfully.

Table 1-12: The First Person Factors[a]

Independent variables (Nagelkerke r^2 = 0.334)	**χ2 values (significance test)**	**Logistic regression coefficients**	**Odds ratios**
Year (1: 2008; 0: 2000)	1.09	.28	1.32
Attempt (1: yes; 0: no)	187.17**	1.38**	3.96**
Authority (1: yes; 0: no)	3.28[@]	-.98**	.38**
Final is first (1: yes; 0: no)	.89	.12	1.12
Interaction of year and attempt	1.53		
Interaction of year and authority	.00		
Interaction of year and final	.00		
Interaction of attempt and authority	19.37**	1.80**	6.06**
Constant		-1.32**	.27**

[a]: Dependent variable is service recovery (1: successful; 0: unsuccessful); The scales for independent variables not mentioned in the table are from 1: strongly agree to 5: strongly disagree.
[@] p<0.1; * p<0.05; ** p<0.01

Finally, the after-recovery severity factors were analyzed. Table 1-13 shows that the interaction term of year and inconvenience was significant at $\alpha = 0.05$, while the interaction term of year and cost was significant at $\alpha = 0.1$. However, the interaction term of year and time was not significant. Thus, Hypothesis 10 is partially supported. Considering the interaction term of year and inconvenience, the odds ratio, 1.89, indicates the odd ratio of inconvenience is 0.81 in 2008 up from 0.43 in 2000 as determined by multiplying 0.43 by 1.89. When the average customer perceived inconvenience increases by 1 unit, the successful percentage of service recovery decreases from 50% to 30.1% and 44.8% in 2000 and 2008, respectively. In other words, the after-recovery inconvenience had a stronger negative impact on successful recovery in 2000 than in 2008. The non-significance of the main effect, time, requires further discussion. Sometimes, service failures can be serious. In these situations, customers expect companies to spend more time, not less, to solve them. Thus, time alone does not influence successful recovery. Companies need to consider time and overall severity simultaneously.

Table 1-13: The After-Recovery Severity Factors[a]

Independent variables (Nagelkerke r^2 = 0.376)	**χ2 values (significance test)**	**Logistic regression coefficients**	**Odds ratios**
Year (1: 2008; 0: 2000)	1.11	.29	1.33
After-recovery cost	85.37**	-.71**	.49**
After-recovery time	.39	-.05	.95
After-recovery inconvenience	62.19**	-.84**	.43**
Interaction of year and cost	3.77[@]		
Interaction of year and time	.68		
Interaction of year and inconvenience	6.40*	.64**	1.89**
Constant		.17[@]	1.18[@]

[a]: Dependent variable is service recovery (1: successful; 0: unsuccessful); The scales for independent variables not mentioned in the table are from 1: strongly agree to 5: strongly disagree.
[@] p<0.1; * p<0.05; ** p<0.01

Table 1-14 summarizes the Nagelkerke r^2 of the factors. Because Nagelkerke r^2 value is a pseudo r^2 value, it cannot be compared across models. However, all logistic models in the study reported here had the same dependent variable, successful recovery, suggesting the comparisons of these r^2 values are legitimate. As the table shows, all factors in the pre-recovery phase had much smaller r^2 values than factors in the immediate recovery phase, indicating that companies involved in a service failure should primarily focus on the factors in the immediate recovery phase to increase the chance of the successful recovery. Control variables (*e.g.*, age, work experience, and student status) were not included in the models analyzed here, because they are not available for the 2000 data. However, the 2008 data was analyzed with and without the control variables and it was determined that the control variables had little effect on the results. This analysis also show that factors in the immediate recovery phase had a significant impact on successful recovery, while factors in the pre-recovery phase did not. When comparing

the 2000 data to the 2008 data, control variables were not used for either set of data. The results show that Table 1-15 and 1-16 summarizes the hypotheses in the current study.

Table 1-14: The Nagelkerke r^2 of Factors

Phase	**Factors**	**Nagelkerke r^2**
Pre-recovery	Severity dimensions	0.039
	Loyalty	0.075
	Perceived quality	0.069
Immediate recovery	Recovery activities	0.862
	First person issues	0.334
	Severity dimensions	0.376

Table 1-15: The Summary of Original Hypotheses from Miller et al. (2000)

Number	Hypothesis	Support?
H1(a)	*Successfully resolved failures are positively related to loyalty.*	Yes
H1(b)	*Successfully resolved failures are positively related to satisfaction with the recovery process and outcome.*	Yes
H1(c)	*Successfully resolved failures are positively related to retention.*	Yes
H2(a)	*Successfully resolved service failures are negatively related to severity (costliness, timeliness, inconvenience) of the problem.*	Yes
H2(b)	*Successfully resolved failures are positively related to pre-failure loyalty.*	No
H2(c)	*Successfully resolved failures are positively related to a service guarantee.*	Not Conclusive
H2(d)	*Successfully resolved failures are positively related to perceived service quality.*	Yes
H2(e)	*Successfully resolved failures are related differentially to how customers perceive the attribution of the failure*	No
H3(a)	*Successfully resolved failures are positively related to tangible recovery activities.*	Yes
H3(b)	*Successfully resolved failures are positively related to psychological recovery activities.*	No
H4(a)	*Successfully resolved failures are negatively related to the length of the pre-recovery phase.*	No
H4(b)	*Successfully resolved failures are negatively related to the length of the immediate recovery phase.*	Yes
H4(c)	*Successfully resolved failures are positively related to the presence of follow-up recovery activities.*	Not Conclusive
H5(a)	*Successfully resolved failures are positively related to the first person contacted attempting to solve the problem.*	Yes
H5(b)	*Successfully resolved failures are positively related to the first person contacted having the authority to solve the problem.*	Yes
H5(c)	*Successfully resolved failures are related differentially to how the company found out about the problem.*	No

Table 1-16: The Summary of Additional Hypotheses in This Study

Number	Hypothesis	Support?
H6(a)	*Service recovery has a stronger positive impact on outcome satisfaction in 2000 than in 2008.*	Yes
H6(b)	*Service recovery has a stronger positive impact on process satisfaction in 2000 than in 2008.*	Yes
H6(c)	*Service recovery has a stronger positive impact on after-recovery loyalty in 2000 than in 2008.*	Yes
H6(d)	*Service recovery has a stronger positive impact on repurchase behavior in 2000 than in 2008.*	No
H7(a)	*The before-recovery severity of problem has a stronger negative impact on successful service recovery in 2000 than in 2008.*	No
H7(b)	*The before-failure loyalty in 2000 and in 2008 have a similar impact on successful service recovery.*	Yes
H7(c)	*The before-failure perceived quality in 2000 and in 2008 have a similar impact on successful service recovery.*	Yes
H8(a)	*The apology recovery activity has a stronger positive impact on successful service recovery in 2000 than in 2008.*	No
H8(b)	*The fair fix recovery activity has a stronger positive impact on successful service recovery in 2000 than in 2008.*	Yes
H9(a)	*The front-line employees' attempts to solve the problems have a similar positive impact on successful service recovery in 2000 and in 2008.*	Yes
H9(b)	*The front-line employees' authority to solve the problems has a similar positive impact on successful service recovery in 2000 and in 2008.*	Yes
H9(c)	*The first person contacted actually solving the problem will have a similar positive impact on successful service recovery in 2000 and in 2008.*	Yes
H10	*The after-recovery severity of problem has a stronger negative impact on successful service recovery in 2000 than in 2008.*	Partial

6. Managerial Implications and Future Research

6.1 Managerial Implications

The results of this study lead to several suggestions for service companies. First, the importance of service recovery found in 2000 is reaffirmed through the 2008 study. As both indicate, companies can ensure more satisfied and loyal customers returning to purchase more services after successful recovery activities, suggesting the importance of establishing good recovery practices in their daily business routines. However, as the 2008 data suggest, the positive impact of successful recovery decreased over time, implying that service recovery has changed from an order winner to an order qualifier. Companies must be mindful of this decrease in service recovery on outcome variables, when they compare recent data with older data in such areas as evaluating employee recovery performance using customer feedback data collected over time. Because of this decrease in the impact of a successful recovery, a less satisfied customer does not necessarily mean an unsuccessful recovery. Companies should focus on the changes in satisfaction before and after service recovery.

Second, companies should do their best to help customers avoid exaggerating the perception that problems may be severe or time-consuming before service recovery can be applied and through service recovery help them avoid costly or inconvenient problems. According to the results reported here, perceptions of overall severity and time are more important to a customer before the recovery process. If customers feel the problems or the recovery processes could be serious or time-consuming, companies will have difficulties to resolve the problems successfully. Thus, companies should minimize these

perceptions, providing a minimally time-consuming complaint system to achieve a higher chance of successful recovery. However, after the recovery process, cost and inconvenience become important factors to customers, meaning that during the recovery process, companies should try to reduce customer cost and inconvenience to increase the chance of a successful recovery. The significant interaction term of year and inconvenience also suggests that companies should be prepared to find that they receive more complaints recently than in the past. This situation probably does not mean that their business has become worse, but that customers are more willing to complain, thereby providing companies more opportunities to solve their problems and improve their processes.

Third, while companies do not need to consider the reasons for patronage in 2008, companies should establish themselves as providers of quality services. When customers perceive the company as a high-quality provider, it has a significantly better chance to solve the problems successfully through service recovery. Fourth, when considering which recovery activities should be used, companies need to provide both psychological (e.g., apology) and tangible (e.g., fair compensation) ones to their customers to solve their problems successfully. In addition, since the impact of a fair fix on successful recovery decreased from 2000 to 2008, companies should use these two primary recovery activities as their standard procedures because most now also use them in their daily business. Fifth, the speed of recovery activities is still important in 2008. Faster recovery processes provide a better chance to solve customer problems successfully. However, the

speed with which the company discovers the failure is not significantly important in the data.

Finally, concerning the delivery issues of recovery activities, the data reported here suggest that it is still important that the first contact person try to solve and have the authority to solve problems. If he/she does both, the chances to resolve problems successfully are high in both the 2000 and 2008 studies. In addition, the 2008 data indicate that authority alone has only a weak impact on successful service recovery. Not only should companies provide their front-line employees with authority to solve the problems, but they also need to train their employees to solve them.

6.2 Future Research

The study reported here suggests several areas for future research. First, the severity of service failures needs further investigation. While the importance of both potential and actual severity were captured in this study, it is not clear whether pre-recovery severity, post-recovery severity, or the difference between these two has the most impact on customer satisfaction. This issue is important because these situations suggest different practices for companies.

Second, while both psychological (e.g., apology) and tangible (e.g., fair and extra compensations) recovery activities were found to be important in this study, the details of how these activities should be implemented are not clear. For example, what is the difference in impact, if any, when apologies come from different employees (*e.g.*, managers vs. front-line employees)? Similarly, what difference, if any, do various

tangible compensations, such as discounts on future purchase or cash refunds for a failed transaction, have on customers? Even though logic suggests an apology from a manager will have more impact, while a coupon for future discounts is worthless to an out-of-town customer who might prefer a cash refund, these issues need further investigations.

Third, the results from this study show that faster recovery processes are more likely to solve problems successfully, while at the same time, time-consuming solutions do not have an impact on the chance of a successful recovery. However, further studies are necessary to investigate the speed of service recovery because, for example, if a person is bumped by the automatic door of a store, a fast apology from a store employee might satisfy this person. However, if a person is knocked down by the automatic door and breaks his arm, a fast recovery process might not be an appropriate response. Future research is needed to explore the impact of situation and service industry on the time factor.

Fourth, future research is needed on the impact of centralized service centers, as they become more popular. Studies need to investigate if these service centers are the best for performing service recovery or if they cost customers more time waiting in line, more iterations repeating the problems they encountered, and delays in finding the correct persons to solve the problem. In addition, the existence of service centers also suggests that companies will not typically find a problem and solve it before the customer is aware of it; thus, they may not be the best method for handling service recovery.

Finally, considering the various types of control in Management, service recovery is a feedback control because companies deal with problems after they happen.

Traditional service recovery tries to convert a complaining customer into loyal one. However, it does not try to prevent anticipated problems in the future as feed-forward control does (Koontz and Bradspies, 1972; Robbins and DeCenzo, 2008). When receiving complaints from customers, companies should try to improve or to create service processes to prevent the same problems from occurring in the future. Expanding their service recovery into feed-forward control, companies can satisfy both their current and future customers by solving the current problem and preventing the same problems from reoccurring. Few studies investigated this issue (Smith, Karwan, and Markland, 2009), but more research is necessary to establish the mechanism of preventing future problems through service recovery.

7. Limitations and Conclusions

This study has several limitations. First, the respondents in it were students. Although students might be a good representation of service consumers, they also might have specific purchase behaviors because of their status. However, no common control variable (e.*g.*, age, work experience, campus living) appeared to have any significant impact on the 2008 data. Second, the study sample size was not large, suggesting the results of this study might not be generalizable to the overall population, although most of the important issues were considered. In addition, the smaller sample size in 2008 than in 2000 might also decrease the statistic power of the regression analyses. However, while this study has limitations, it analyzed service recovery activities over time and provides comparisons between 2000 and 2008. Its results will lead future researchers to

further investigate service recovery, perhaps providing a clear roadmap and guidelines for companies to use in establishing their recovery practices.

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Appendix 1-1: Survey Questions in Essay 1

This is a survey about SERVICE RECOVERY (Things companies should do when there is a failure in the service delivery process). Think of an incident in which service companies (or the service side of non-service companies) failed to deliver what you expected. After the failure, the company tried to solve the problem.
This survey also tries to measure the dimensions of different cultures. Further, the survey can investigate whether the SERVICE RECOVERY processes are different in different cultures.

1. After the service failure and the company tried to recover from their failure, were you satisfied or not satisfied with their service recovery process?
   Satisfied Not Satisfied
2. Describe the company that was involved (name, type of business, size or organization).
3. How many times had you used the company prior to the service failure?
   0 1 2-4 5-10 11-19 20 or more
4. How long had you been using the company's services when the failure occurred?
   The first time Days Weeks Months Years
5. Prior to the service failure, you would have classified yourself as a loyal customer.
   Strongly Agree Agree Neutral Disagree Strongly Disagree
6. Prior to the service failure, you viewed the company as a provider of a high quality service.
   Strongly Agree Agree Neutral Disagree Strongly Disagree
7. What made you decide to use this company versus another?
   Reputation Personal experience w/company
   Recommendation of friend/family member Advertisement/Sale
   Convenience No other choices available Other
8. Describe the service failure.
9. To the best of your knowledge, did the company have a stated guarantee related to

this kind of problem? If yes, describe it.

10. How serious could the failure have been IF no resolution had been attempted?

    Very serious Serious Mildly serious Of minor consequence Of no consequence

11. The service failure could have cost me much money IF no resolution had been attempted.

    Strongly Agree Agree Neutral Disagree Strongly Disagree

12. The service failure could have cost me much lost time IF no solution had been attempted.

    Strongly Agree Agree Neutral Disagree Strongly Disagree

13. The service failure could have caused me much inconvenience IF no resolution had been attempted.

    Strongly Agree Agree Neutral Disagree Strongly Disagree

14. How did the company find out that you were not satisfied with the service?

    The company figured it out and notified me before I complained (in writing, in person, by phone, by email)

    The company asked (in writing, in person, by phone, by email) and I responded (in writing, in person, by phone, by email, leave message on company website)

    The company didn't ask, but I told them (in writing, in person, by phone, by email, leave message on company website)

    Other

15. How long after the failure occurred did the company find out about it?

    Seconds Minutes Hours Days Weeks Months Years

16. Once the company found out about the problem, did you receive an apology?

    Yes (in writing, in person, by phone, by email) No

17. If you received an apology, the apology was sincere.

    Strongly Agree Agree Neutral Disagree Strongly Disagree

18. Please explain their apology.

19. How long after the company found out about the failure did the solution process

begin?

Seconds Minutes Hours Days Weeks Months Years

20. With whom did you originally discuss the problem (or write to)?
21. Did that person solve or attempt to solve the problem?

Yes No

22. Did that person appear to have the authority to solve the problem?

Yes No

23. Who was the final person you dealt with during the problem resolution process?

The person described above A manager or supervisor The business owner Other

24. How long did it take the company to finish the whole solution process?

Seconds Minutes Hours Days Weeks Months Years

25. How many service representatives did you have contact with during the entire solution process?

One Two Three Four Five or more

26. Describe the final solution to the problem.
27. The company solved the problem to your satisfaction.

Strongly Agree Agree Neutral Disagree Strongly Disagree

28. The company solved the problem in a manner that was fair to you.

Strongly Agree Agree Neutral Disagree Strongly Disagree

29. The company went beyond a “fair fix” to the problem by including a little (or a lot) extra for your trouble.

Yes No

30. If yes, describe the “little extra.”
31. How likely are you to do business with the company again after the failure?

I already have gone back to the company Very likely Somewhat likely Somewhat unlikely Very unlikely I am certain I will never return

32. Explain how the company could have done a better job solving the problem.
33. After the solution process, you viewed the company as a provider of a high quality

service.

Strongly Agree Agree Neutral Disagree Strongly Disagree

34. After the solution process, how serious was the service failure?

Very serious Serious Mildly serious Of minor consequence Of no consequence

35. After the solution process, the service failure actually cost me much money.

Strongly Agree Agree Neutral Disagree Strongly Disagree

36. Estimate and describe the actual cost of the failure.
37. After the solution process, the service failure actually caused me much lost time.

Strongly Agree Agree Neutral Disagree Strongly Disagree

38. Estimate and describe the actual time you lost because of the failure.
39. After the solution process, the service failure actually caused me much inconvenience.

Strongly Agree Agree Neutral Disagree Strongly Disagree

40. Estimate and describe the actual inconvenience you encountered because of the failure.
41. Describe (who, what, when, how) the very last time that you contacted with the company about this failure.
42. Without considering the outcome, how satisfied were you with the solution PROCESS?

Very satisfied Satisfied Normal Dissatisfied Very dissatisfied

43. How satisfied were you with the OUTCOME of the solution process?

Very satisfied Satisfied Normal Dissatisfied Very dissatisfied

Do you agree or disagree the following statements?

Strongly Agree Agree Neutral Disagree Strongly Disagree

44. After the service failure and the solution process you would call yourself a loyal customer.
45. Your opinion of the company has improved because of the service failure, the solution process and the outcome.

Demographic Questions

Some information about yourself (for statistical purposes):

Are you:

1. female
2. male

How old are you?

1. Under 17
2. 18
3. 19
4. 20
5. 21
6. 22
7. 23
8. 24 or over

How many years of formal school education (or their equivalent) did you complete (starting with primary school)?

1. 10 years or less
2. 11 years
3. 12 years
4. 13 years
5. 14 years
6. 15 years
7. 16 years
8. 17 years
9. 18 years or over

If you have or have had a paid job, what kind of job is it/was it?

1. No paid job (includes full-time students)
2. Unskilled or semi-skilled manual worker
3. Generally trained office worker or secretary
4. Vocationally trained craftsperson, technician, IT-specialist, nurse, artist or equivalent
5. Academically trained professional or equivalent (but not a manager of people)
6. Manager of one or more subordinates (non-managers)
7. Manager of one or more managers

Where do you live?

1. On campus
2. Off-campus with parents/family
3. Off-campus by yourself
4. Off-campus with roommate(s)

What is your student status?

1. In-state
2. Out-of-state
3. International

Essay 2 Resolving the Service Recovery Paradox: A Cross-Country Comparison Between the U.S and Taiwan

Abstract:

This study proposes a cross-cultural model of service recovery based on three dimensions of justice theory—interactional, procedural, and distributive—for the US and Taiwan. Using data collected from more than 200 college students from the two countries, it investigates the mediation effects of the justice types on process and outcome satisfaction in service recovery situations. The model, specifically, considers interactional justice at a service encounter to illustrate that interactional justice has an important role on recovery outcomes through procedural and distributive. These empirical findings may partially explain the inconclusive results related to justice theory and the service recovery paradox found in prior service recovery studies. Applied to the cross-cultural perspectives of service recovery, these findings indicate that caution should be used when applying US-oriented recovery practices to other regions. The empirical evidence reported here suggests a difference in the impact of justice on customer satisfaction between the US and Taiwanese respondents. Using these results, service companies can better understand the relationships among service failure severity factors, justice dimensions, and recovery outcomes, important in the development of their service recovery activities. In addition, this study offers suggestions for international companies in how to adjust their recovery activities, given the cultural differences between the US and Taiwan.

1. Introduction

To resolve the service recovery paradox, this study aims to establish a theory-based service recovery model applying justice theory. The service recovery paradox implies that customers who experience a service failure and a good recovery are often more satisfied than those who experience no service failures (Michel and Meuter, 2008). Developed from "justice as fairness" (Rawls, 1971), justice theory in service recovery implies that the justice customers perceive after recovery influence their emotions and loyalty to the service companies (McColl-Kennedy and Sparks, 2003). This study explores how culture influences perceptions of service recovery in the United State and Taiwan. Since Hart, Heskett, and Sasser (1990) proposed it, "The Profitable Art of Service Recovery" has been the focus of service operations research. In the past decade, the application of justice theory and the service recovery paradox are two of the most widely researched service recovery topics. However, the studies related to these two topics are not conclusive. Specifically, the research reported here subjects to rigorous empirical scrutiny, the influence of service failure severity factors on the model process and outcome satisfaction, and the mediating influence of three theory-based, situational justice dimensions—interactional, procedural, and distributive (Colquitt, 2001).

In addition, few studies (Lee, Khan, and Ko, 2008; Mattila and Patterson, 2004; Patterson, Cowley, and Prasongsukarn, 2006) have analyzed service recovery using cross-national data, although the US service industry has performed well globally since 2002. The industry has increased service exports through both cross-border trade (*e.g.,* travel, transportation, financial service) and majority-owned affiliates (*e.g.,* wholesale

and retail trade) in last six consecutive years (Koncz and Flatness, 2008). This trend suggests that the US international service companies need to consider different cultural backgrounds when they conduct their business in other countries. At the same time, the US domestic service companies also serve more international customers, given the United States' high ranking in both international tourism receipts and international tourist arrivals (U.N. World Tourism Organization, 2008). Importantly, in the international service study, Voss, Roth, Rosenzweig, Blackmon, and Chase (2004) found differences in perceptions of service quality and customer satisfaction between the US and British service firms. These results, striking because of the cultural similarity between the two countries, suggest that more research is needed in understanding how service concepts, like service recovery, translate in different cultures. This paper adds to the body of international service research by comparing service recovery justice factors on recovery outcomes in the US and Taiwan.

There are several important reasons why examining Taiwanese customers' responses make cross-country comparisons a valuable contribution in service research. Taiwan is among the US top twenty international service business partners in both cross-border exports and affiliate service sales (Koncz and Flatness, 2008). In addition, Taiwan as an Asian country is substantially different from the US in several primary cultural dimensions—Power Distance, Individualism/Collectivism, Masculinity/Femininity, Uncertainty Avoidance, as well as Long- and Short-Term Orientation (Hofstede and Hofstede, 2005). Past research has suggested several Asian countries, including China, Hong Kong, Japan, Korea, Singapore, and Taiwan, are deeply influenced by Confucius

philosophy, implying that Taiwan customers serve as a reasonable representation of the other Confucius-based cultures (Hofstede and Bond, 1988). Each of these six Asian countries are ranked among the US top twenty-one service partners (Koncz and Flatness, 2008). Thus, contrasting Taiwanese- versus the US-based notions of service recovery and customer outcomes is a first step in understanding Asian customer responses, and in turn, the results will contribute to future research and be beneficial to international service companies.

This paper establishes that situational justice factors mediate a customer's perception of service recovery severity and outcomes, but the manner in which these factors act on loyalty and intent to repurchase differs when comparing customers in the US with their Taiwanese counterparts. These results reflect the role that cultures plays in service recovery, thereby making several contributions to research and practice. First, using existing survey items from both service recovery practices (Miller, Craighead, and Karwan, 2000) and cultural dimensions (Hofstede, 2008) as well as recruiting similar respondent types, this research establishes measurement invariance in key constructs, and in turn, facilitates valid comparisons between the two countries. Second, it resolves, in part, the puzzled results of service recovery regarding the role that justice theory plays on service recovery. This study finds that interactional justice at the service encounter is necessary for higher performance outcomes. Third, by determining the distinct roles that procedural and distributive justice play on customer satisfaction with the recovery process and recovery outcome, respectively, a new theory explaining the role of justice between the US and Taiwan is offered. This theory reveals how recovery practices will

vary with cultures, setting the stage for future research. Fourth, by addressing the recovery practices, service managers can adopt the metrics and the model as a blueprint for evaluating and improving their current recovery practices, and to better understand how practices should be reshaped in globalizing services.

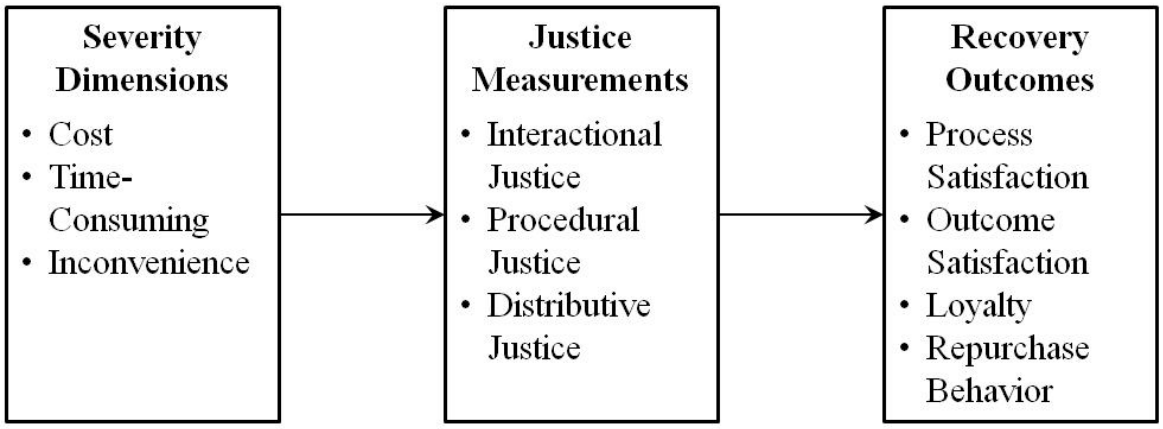

Figure 2-1: Conceptual Model Showing Causal Chain

This paper is organized as follows. First, the next section provides the background which motivates this research. It covers the service recovery paradox, service encounter, justice theory, and cultural dimensions. Second, the relevant literature related to the new theory of service recovery and justice is presented, along with the hypothesized model. Third, the research methodology is given, followed by a discussion of the empirical results. Following the results, managerial recommendations, future research, and limitations conclude this paper.

2. Backgrounds

As illustrated in Figure 2-1, the conceptual model based on the proposed new recovery theory consists of three groups of factors, severity dimensions, justice measurements, and recovery outcomes. First, this research draws upon the recovery framework proposed by Miller and her colleagues (2000). In the study reported here, severity, pertaining to the seriousness of the service failures customers encounter, one of several important factors listed in this framework, focuses on the severity of the problems after recovery. Next, the service recovery paradox, which motivates the establishment of the relationships among recovery outcomes, is discussed followed by a discussion of justice theory. Three justice factors—interactional, procedural, and distributive are introduced, and the inconclusive results that the role justice plays in service recovery are discussed. Concluding this section, Hofstede's cultural dimensions (Hofstede and Hofstede, 2005) are introduced to illustrate the possible cultural differences between the United States and Taiwan.

2.1. Service Recovery and Service Recovery Paradox

Service transactions are distinguished from goods transactions by five characteristics, customer participation in the service process, simultaneity, perishability, intangibility, and heterogeneity (Fitzsimmons and Fitzsimmons, 2008). Simultaneity and heterogeneity make service companies difficult to provide quality service to their customers consistently. Because service is created and consumed simultaneously, companies cannot inspect the quality of their service before its delivery. Customers

usually have heterogeneous expectations of the same service, so companies have difficulties in satisfying all customers the same way. Thus, service failures can happen in any service transaction. By establishing good service recovery practices, companies can solve service failures resulting from both the lack of inspection and the presence of different expectations.

Researchers have analyzed the benefits of service recovery, investigating the practices that can convert complaining customers into loyal ones. Oliveira and Roth (2008) found that service recovery is an important factor influencing the performance of service-oriented companies, including both manufacturing and service ones. By conducting critical incident analysis of service recovery, Miller and her colleagues (2000) established a framework for describing the different stages of service recovery processes. The severity of the failure, one of several factors influencing the success of service recovery in their framework, includes cost, time-consuming, and inconvenience. Failure severity and customer pre-failure loyalty are investigated, leading to suggestions of service recovery strategies for service companies (Craighead, Karwan, and Miller, 2004). Failure severity in recovery practices is not discussed only in the service industry. Applying service recovery to supplier-customer relationships in manufacturing, Primo, Dooley and Rungtusanatham (2007) found that the severity of a supplier's failure has an impact on the success of its recovery.

One of several topics in service recovery is the "service recovery paradox," the situation where customers encountering both service failure and good service recovery often exhibit higher satisfaction than customers never encountering a service failure

(Michel and Meuter, 2008). If this paradox is true, companies with good service recovery practices can benefit by intentionally failing in the service provided to their customers. Several studies have investigated this paradox, but the results are not consistent. Conducting experiments involving failures and the subsequent recovery scenarios in restaurant settings, Hocutt, Bowers, and Donavan (2006) found that customers encountering high levels of redress, empathy/courtesy, and responsiveness in the recovery process have significantly higher satisfaction than customers not encountering failures, suggesting the existence of the service recovery paradox. Magnini, Ford, Markowski, and Honeycutt (2007) determined that a service recovery paradox is most likely to happen when the failure severity is low, when customers encounter no prior failures, and when the cause of the failure, as perceived by the customers, is neither stable nor controllable by the companies. Analyzing the results of interviews of more than 11,000 banking customers, Michel and Meuter (2008) found the statistically significant existence of service recovery paradox, but a rare event. However, several researchers did not find this paradox. Evaluating customer satisfaction regarding several recovery practices, including communication and monetary compensation, Shapiro, Nieman-gonder, Andreoli, and Trimarco-Beta (2006) did not find significant evidence of the service recovery paradox. This inconsistency is even more problematic when different results are found in different years by the same group of researchers. Ok, Back, and Shanklin (2007) found that customers have higher overall satisfaction after experiencing good service recovery than customers encountering no failure; however, in contrast, the

2006 study from the same authors (Ok, Back, and Shanklin, 2006) did not support the existence of the service recovery paradox.

There are several plausible reasons for the mixed findings concerning the service recovery paradox. One is that prior studies do not distinguish between two types of customer satisfaction—process and outcome—which in turn, may have different effects on loyalty and repurchase behaviors. In the study reported here, *process satisfaction* indicates whether customers are satisfied with the recovery process, while *outcome satisfaction* refers to customer satisfaction relating to the recovery results. A service failure in the barber shop can be used as an example to differentiate the two. In this case, a bad hair cut (service failure) cannot immediately be resolved because the hair cannot be restored to its original condition. Although the service provider tries his/her best to recover this failure by apologizing for the bad style and giving coupons for future visits, the basic problem cannot be resolved. In this situation, the customer might feel satisfied with the *recovery process* but remain dissatisfied with the *recovery outcome*. The opposite situation regarding a dissatisfied process but a satisfied outcome often occurs in a restaurant, when, for example, a customer is not served the meal as ordered. The restaurant can immediately cook another meal to fulfill the customer's original order, but the server may be rude to customer in the recovery process. In this case, the customer might be satisfied with the *recovery outcome* but not the *recovery process*. Thus, process and outcome satisfaction are distinct and should be analyzed as separate constructs in any investigation of service recovery related outcomes, including loyalty and intent to repurchase.

2.2. Justice Theory in Service Recovery

While discussions of justice or fairness can be traced back 1000 years to Plato and Socrates (Colquitt, Conlon, Wesson, Porter, and Ng, 2001), the current study of justice theory can traced back to the "justice as fairness" concept proposed by Rawls (1971). Initially, only distributive justice was considered until in 1975, Thibaut and Walker introduced the study of procedural justice (Colquitt *et al.*, 2001), inaugurating the discussion of the justice of process. In recent research, most procedural studies follow the six criteria proposed by Leventhal and colleagues in an organizational setting (Leventhal, 1980; Leventhal, Karuza Jr., and Fry, 1980). The most recent advancement in justice theory was the introduction of interactional justice (Bies and Moag, 1986), and its two aspects, interpersonal and informational, proposed by Greenberg (1993). In a recent study on these four dimensions of justice, Colquitt (2001) found that the four dimensions are distinguishable and influence different outcomes. However, only distributive, procedural, and interactional justice are considered in most service recovery incidents.

Justice theory, proposed to be useful in service recovery studies (McColl-Kennedy and Sparks, 2003; Sparks and McColl-Kennedy, 1998), has applied in both empirical and experimental studies (Chang and Hsiao, 2008; Schoefer and Diamantopoulos, 2008; Shapiro and Nieman-Gonder, 2006). This research considers three justice dimensions: interactional justice (IJ), procedural justice (PJ), and distributive justice (DJ). Interactional justice concerns issues regarding whether the service company is open and honest, whether the recovery decisions are well explained, and whether the customers are treated with dignity and respect (Colquitt, 2001; Patterson *et al.*, 2006;

Schoefer and Diamantopoulos, 2008). Procedural justice implies that the process is fair and standardized and occurs over an appropriate amount of time (Colquitt, 2001; Maxham and Netemeyer, 2003; Schoefer and Diamantopoulos, 2008). Distributive justice includes fair results and outcomes from service recovery (Colquitt, 2001; Maxham and Netemeyer, 2003; Schoefer and Diamantopoulos, 2008). Appendix 2-2 lists the related literature. Based on this prior research, these three dimensions of justice theory in terms of service recovery are defined here as follows: 1) Interactional justice is defined as the fair interactions between employees and customers during service recovery activities; 2) Procedural justice is the fairness of the recovery process during service recovery; 3) Distributive justice is the fairness of the outcomes after recovery process.

The findings on how the various dimensions of justice influence recovery outcomes are not consistent across studies. Ok, Back, and Shanklin (2005) found that distributive justice does not have a significant impact on overall satisfaction, revisit intention, or positive word-of-mouth intention according to survey results from normal customer samples, while procedural justice does not have a significant impact on the same outcomes from student samples. Gregoire and Fisher (2008) investigated justice violations, finding that interactional justice does not have a main effect on the perceived betrayal measures, leading to retaliatory behavior and demands for reparation. These findings suggest that the three types of justice do not have the same impact on the recovery outcomes.

Customer participation in the service process, one of the five characteristics in service transactions, provides some insight on the relationship among three justice

dimensions. Because of customer participation, service operations are usually divided into two stages, front and back office. While customers encounter the service in the front office, they are not permitted in the back office, where companies conduct service operations before and after delivering the service in the front office. Researchers also propose that customers perform seven different roles in the service supply chain (Sampson, 2007). Thus, customer participation in the service process suggests the importance of the service encounter.

Researchers have used the features of the customer encounter to classify service. Lovelock (1983) discussed the relationships between companies and consumers to show the importance of understanding the customers. Schmenner (1986) established the service process matrix according to the level of labor intensity as well as the interaction and customization. Based on these levels, service managers face different challenges and develop different survival strategies. The importance of the service encounter is also discussed in extant service literature (Chase, 1978, 1981; Huete and Roth, 1988; Kellogg and Chase, 1995).

Illustrating a service operations management research framework, Roth and Menor (2003) conclude that service encounter is the linchpin in the firm's target market, service concept, and service delivery system. Since service recovery is one kind of service (Bhandari, Tsarenko, and Polonsky, 2007), a service encounter should also play an important role in service recovery. In this research, the service encounter is the cornerstone of the interaction between customers and companies, and it is reasonable to posit that in service recovery, the role of interactional justice will dominate procedural

and distributed justice. Thus, interactional justice is a proxy for the justice that customers experience in the recovery process.

2.3. Hofstede's Cultural Dimensions

Although the service industry has become important in international trade, few studies (e.g., Lee *et al.*, 2008; Mattila and Patterson, 2004) have analyzed it using cross-national data. Despite the fact that researchers in management have advocated cross-national studies for decades (Hofstede, 1980, 1994), most are related to marketing rather than to operations management. In other words, most of these studies emphasize customers' reactions to service recovery in different cultural backgrounds but do not discuss how to adjust recovery practices for customers in different countries. This study aims to provide theory-based suggestions for culture-tailored recovery practices by examining the service recovery in the US and Taiwan.

The most frequently used dimensions to investigate cultural differences are those suggested by Hofstede (Newburry and Yakova, 2006). His model, including Power Distance, Individualism / Collectivism, Masculinity / Femininity, Uncertainty Avoidance, as well as Long- and Short-Term Orientation, is considered the most comprehensive in cross-culture studies (Kogut and Singh, 1988). When analyzing the data from IBM employees in 1980's, Hofstede (1983) found the first four dimensions illustrating the differences among countries. Around 1990, researchers in Hong Kong developed a similar questionnaire for people in Asia, finding the fifth dimension in addition to the previous four (Hofstede and Bond, 1988). Recently, Hofstede improved the previous

survey and analyzed two additional dimensions, Indulgence / Restraint and Monumentalsm, in addition to the previous five (Hofstede, 2008). Among these seven dimensions, three—Individualism / Collectivism, Uncertainty Avoidance, as well as Long- and Short-Term Orientation—are considered important to service recovery because they are related to the factors of severity and justice.

Individualism indicates a society "in which the ties between individuals are loose: everyone is expected to look after himself or herself and his or her immediate family" (Hofstede and Hofstede, 2005, p. 76). Collectivism, in contrast, pertains to a society "in which people from birth onward are integrated into strong, cohesive in-groups, which throughout people's lifetimes continue to protect them in exchange for unquestioning loyalty" (Hofstede and Hofstede, 2005, p. 76). Depending on the levels of analysis, Individualism and Collectivism can be analyzed as the same or as different dimensions. However, at the level of the nation, Individualism and Collectivism are treated as the opposites of the same dimension (Hofstede and Hofstede, 2005). Based on the Hofstede's IBM database, United States, with the highest score of 91 on Individualism Index (IDV), is ranked at 1, while Taiwan is at the opposite end of this dimension with a score of 17 and a rank of 64.

Many studies have investigated the differences between individualists and collectivists, which is considered the primary differences between Eastern and Western countries (Fadil, Williamson, and Knudstrup, 2009). Investigating online customer behavior, Eng and Kim (2006) found that high collectivism will increase "lock-in," indicating increased purchase behavior because of a relationship with other customers. In

other words, collectivists prefer to be similar to others and prefer standardization (Newburry and Yakova, 2006). Considering customer behavior after good service, Patterson and Smith (2003) suggested that collectivism is the reason for lower loyalty in Thailand than in Australia, while Liu, Furrer, and Sudharshan (2001) found that collectivists tend to praise service providers. Some researchers have focused on ethical issues, finding that collectivists have less trust in service professionals than individualists (Shaffer and O'Hara, 1995).

Uncertainty Avoidance is defined as "the extent to which the members of a culture feel threatened by ambiguous or unknown situations" (Hofstede and Hofstede, 2005, p. 167). The scores on the Uncertainty Avoidance Index (UAI) in the IBM database for Taiwan and the United States are 69 and 46 respectively, ranking Taiwan and the United States at 39 and 62 respectively. In countries with a high UAI ranking, people anticipate more rules even if they do not work, perceiving that "time is money," while in countries with a low UAI ranking, people expect fewer rules, only those which are necessary, believing time is used for "orientation" (Hofstede and Hofstede, 2005). Because of these different attitudes, people in the former might focus on guarantees during the recovery process and anticipate that companies spend much time on recovering the failures. Analyzing business-to-business service in Europe, Reimann, Lunemann, and Chase (2008) found that people in countries with a high UAI ranking tend to be less satisfied when perceiving non-quality service. Similar to collectivists, people these countries tend to give more praise after good service (Liu et al., 2001) and prefer standardization (Newburry and Yakova, 2006).

The third dimension, Long- and Short-Term Orientation, is the last one developed and the first investigated in the Chinese Value Survey (Hofstede and Bond, 1988). This dimension is based on group values from the teachings of Confucius. While Long-Term Orientation represents "the fostering of virtues oriented toward future rewards," Short-Term Orientation stands for "the fostering of virtues related to the past and present" (Hofstede and Hofstede, 2005, p. 210). Several Asian countries score and rank high on Long-Term Orientation Index (LTO). While Taiwan's index score is 87 and rank is 3, the index score of the United States is 29 and its rank 31. Few studies have focused on this dimension since it is more recent than the others. However, several studies compared Western and Asian countries, providing evidence of long-term orientation in Asian countries. Comparing customers in Canada and China, Poon, Hui, and Au (2004) found that Canadians tend to attribute service failures more to service companies and feel their control of the situation is more limited by the companies than their Chinese counterparts. Investigating customer behavior after a successful recovery in the United States and Korea, Lee, Khan, and Ko (2008) found that, in general, Korean customers tend to have more positive word-of-mouth, more patronage, and higher loyalty than US ones. All these findings suggest Asian customers tend to keep long-term relationships with service companies if they receive good service or service recovery.

3. Service Recovery Model

In this section, the service recovery model is developed. Three topics are discussed, Severity Dimensions, Justice Measurements, and Recovery Outcomes. Figure

2-1 illustrates the conceptual factors in each group, while the path model developed here depicting the formal hypotheses is given in Figure 2-2.

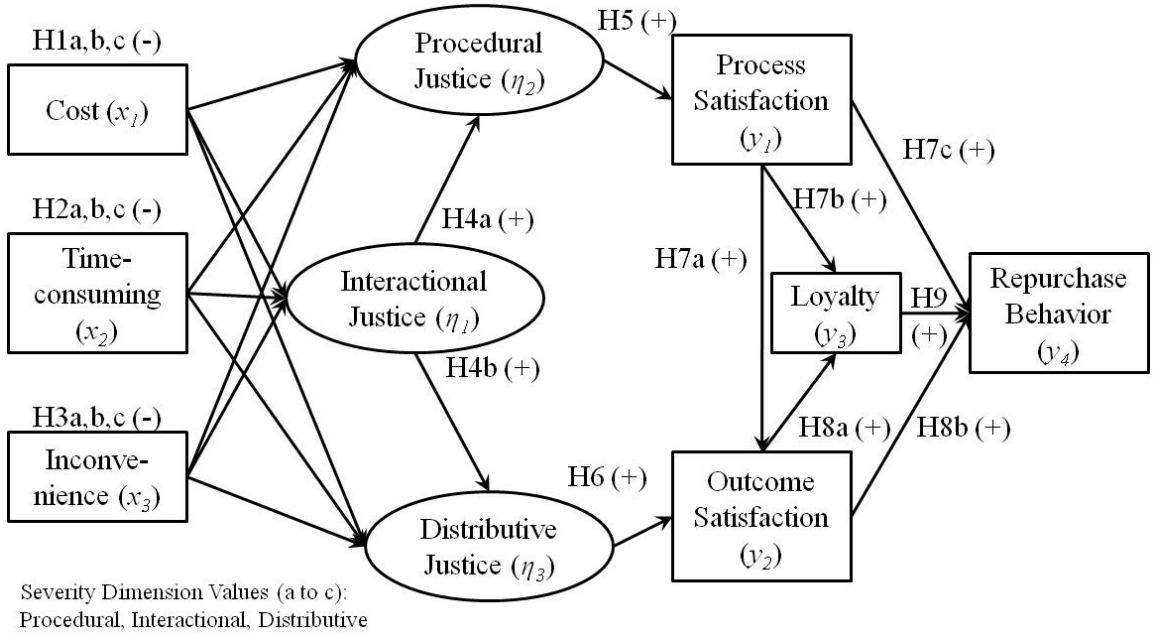

Figure 2-2: A Service Recovery Path Model (Note: Oval shape is for latent factors. For clarity, indicators for latent factors, lambdas, correlations among severity dimensions, and all error terms are not shown.)

3.1. Severity Dimensions

The severity of service failures in terms of impact on the customer on cost, time, and inconvenience, is proposed to influence service recovery performance. Miller, Craighead, and Karwan (2000) found that the severity of the failure, both before- and after-recovery, has an impact on whether the recovery is successful. Failure severity has been found to impact directly on customer satisfaction and repurchase behavior (Worsfold, Worsfold, and Bradley, 2007), to moderate the relationship between justice and satisfaction (Weun, Beatty, and Jones, 2004), and to influence the relationship between service recovery practices and perceived justice (Liao, 2007). Failure severity

also plays an important role in determining the recovery strategies (Craighead *et al.*, 2004; Levesque and McDougall, 2000). Applying service recovery concepts to manufacturing environments, Primo, Dooley, and Rungtusanatham (2007) found that severity is one of several important factors influencing supplier recovery success. However, most past studies have focused on the failure severity before recovery. The research reported here considers only the after-recovery failure severity, which is perceived by customers after service companies conduct recovery practices. The service failure customers encounter prompt them to evaluate the fairness they perceived (McColl-Kennedy and Sparks, 2003), and only the after-recovery severity can provide customers with an accurate evaluation of the fairness they perceived during the recovery process. Accordingly, a high perception of the severity in terms of cost, time, and inconvenience is associated with a lower perception of justice, regardless of the type. The hypotheses below follow from this discussion. Therefore,

Hypothesis 1a ($\gamma_{\eta_2 x_1}$): The severity of cost has a direct and negative impact on procedural justice.

Hypothesis 1b ($\gamma_{\eta_1 x_1}$): The severity of cost has a direct and negative impact on interactional justice.

Hypothesis 1c ($\gamma_{\eta_3 x_1}$): The severity of cost has a direct and negative impact on distributive justice.

Hypothesis 2a ($\gamma_{\eta_2 x_2}$): The severity of time-consuming has a direct and negative impact on procedural justice.

Hypothesis 2b ($\gamma_{\eta_1 x_2}$): The severity of time-consuming has a direct and negative impact on interactional justice.

Hypothesis 2c ($\gamma_{\eta_3 x_2}$): The severity of time-consuming has a direct and negative impact on distributive justice.

Hypothesis 3a ($\gamma_{\eta_2 x_3}$): The severity of inconvenience has a direct and negative impact on procedural justice.

Hypothesis 3b ($\gamma_{\eta_1 x_3}$): The severity of inconvenience has a direct and negative impact on interactional justice.

Hypothesis 3c ($\gamma_{\eta_3 x_3}$): The severity of inconvenience has a direct and negative impact on distributive justice.

3.2. Justice Measurements

Fairness theory, including interactional, procedural, and distributive justice, has been proposed to enrich service recovery research (McColl-Kennedy and Sparks, 2003; Sparks and McColl-Kennedy, 1998). Several studies have analyzed the relationships among customer perceived overall justice, customer satisfaction, and repurchase behavior. Schoefer and Diamantopoulos (2008) found that justice has a direct and positive impact on positive emotions, while Schoefer and Ennew (2005) found an indirect impact, suggesting justice measurements can have both a direct and indirect impact on satisfaction. In addition, several studies investigating service recovery incidents determined that justice measures have a positive impact on customer satisfaction (Casado-Diaz, Mas-Ruiz, and Kasper, 2007; Hocutt *et al.*, 2006; Liao, 2007; Shapiro *et al.*, 2006). Analyzing service recovery incidents, Robbins and Miller (2004) found that both procedural and distributive justice have a positive impact not only on customer satisfaction but also on customer repurchase behavior. Considering business-to-business environments, White and Yanamandram (2007) also proposed a positive relationship between justice and repurchase behavior.

Instead of combining the three justice dimensions, some studies consider these dimensions separately to investigate the relationships among them. Schoefer and Ennew (2005) suggested that interactional justice influences the other two, while Gregoire and

Fisher (2008) found that interactional justice does not have a direct impact on perceived betrayal, implying that procedural and distributive justice measures might mediate or moderate the relationship between these two constructs. In addition, since a service encounter is considered one of the important elements in service transactions (A. V. Roth and Menor, 2003), for service recovery, one kind of service, this aspect should also be regarded as the most important element in recovery activities. Therefore, interactional justice, represented as a service encounter in recovery activities, should be the most important of the three justice dimensions and have a positive impact on the other two justice measures. Based on these studies, the following hypotheses are proposed:

Hypothesis 4a ($\beta_{\eta_2\eta_1}$): Interactional justice has a direct and positive relationship with procedural justice.

Hypothesis 4b ($\beta_{\eta_3\eta_1}$): Interactional justice has a direct and positive relationship with distributive justice.

The impact of justice dimensions on recovery outcomes has not been found to be conclusive in recent studies. Shapiro and his colleagues (2006) found that recovery outcomes are similar among customer groups encountering only interactional justice, only distributive justice, both interactional and distributive justice, and no failure. Collectively, these results suggest that distributive and interactional justice has a similar impact on recovery outcomes, indicating both positively influence recovery outcomes. Surveying both regular customers and students, Ok and his colleagues (2005) found that distributive justice does not have a significantly positive impact on the recovery outcomes of overall satisfaction, revisit intention, and positive word-of-mouth intention,

for regular customer samples, while procedural justice has no significant impact on the same outcomes for student samples. Based on data from French undergraduate students, Aurier and Siadou-Martin (2007) found only procedural justice among the three dimensions has a significantly positive impact on satisfaction. Because of these inconclusive results, procedural and distributive justice is considered distinct and will influence process and outcome satisfaction differently. In addition, Colquitt (2001) found that distributive justice has a positive and direct impact on outcome satisfaction in an undergraduate classroom setting. Thus, hypotheses 5 and 6 below are proposed:

Hypothesis 5 ($\gamma_{y_1\eta_2}$): Procedural justice has a direct and positive relationship with recovery process satisfaction.

Hypothesis 6 ($\gamma_{y_2\eta_3}$): Distributive justice has a direct and positive relationship with recovery outcome satisfaction.

3.3. Recovery Outcomes

The most important goal of service recovery is to convert complaining customers into loyal ones and have them repurchase services in the future. Recovery outcomes discussed here include four variables—process satisfaction, outcome satisfaction, after-recovery loyalty, and repurchase behavior. Surveying 471 customers in the hospitality industry, DeWitt and his colleagues (2008) concluded that positive emotions, like satisfaction, have a positive impact on customer loyalty. In addition, the direct and positive influence of customer satisfaction on repurchase behavior has been found in several studies (Jones and Farquhar, 2007; Liao, 2007). Since customers with high process satisfaction usually feel high outcome satisfaction, it is reasonable to propose that process satisfaction positively influence outcome satisfaction. Schoefer and his research

partners (Schoefer and Diamantopoulos, 2008; Schoefer and Ennew, 2005) determined that positive emotions have a positive impact on both customer satisfaction and repurchase behavior; thus, satisfaction has a direct impact on repurchase intentions. The positive relationship between loyalty and repurchase behavior is clear. In service recovery incidents, DeWitt, Nguyen, and Marshall (2008) also found that loyalty has a positive impact on repurchase behavior. These relationships are reflected in the hypotheses below:

Hypothesis 7a ($\gamma_{y_2 y_1}$): Recovery process satisfaction has a direct and positive relationship with recovery outcome satisfaction.

Hypothesis 7b ($\gamma_{y_3 y_1}$): Recovery process satisfaction has a direct and positive relationship with after-recovery loyalty.

Hypothesis 7c ($\gamma_{y_4 y_1}$): Recovery process satisfaction has a direct and positive relationship with repurchase behavior.

Hypothesis 8a ($\gamma_{y_3 y_2}$): Recovery outcome satisfaction has a direct and positive relationship with after-recovery loyalty.

Hypothesis 8b ($\gamma_{y_4 y_2}$): Recovery outcome satisfaction has a direct and positive relationship with repurchase behavior.

Hypothesis 9 ($\gamma_{y_4 y_3}$): After-recovery loyalty has a direct and positive relationship with repurchase behavior.

3.4. Cultural Impact

In this section, the cultural impact on the service recovery model proposed here is discussed. Customers in different countries are influenced by their cultural backgrounds. The cultural index scores found in previous studies (Hofstede, 1983; Hofstede and Bond, 1988; Hofstede and Hofstede, 2005) clearly indicate the differences between the US and Taiwan customers. This study proposes to investigate if the service recovery model as a whole is different between the two countries through the discussions of the three cultural

dimensions, Individualism / Collectivism, Uncertainty Avoidance, and Long- and Short-Term Orientation.

Of the three cultural dimensions, Uncertainty Avoidance and Long- and Short-Term Orientation relate to customer perception of time. For example, people in countries with high Uncertainty Avoidance Index (UAI) ranking (*e.g.*, Taiwan) regard "time as money" (Hofstede and Hofstede, 2005). This situation can have an opposite impact on customer perception of recovery time. Customers may want to spend little of their time (*i.e.*, their money), but at the same time, they may prefer service companies to spend much time (*i.e.*, the company's money) on recovering the failures. Customers in countries with high Long-Term Orientation Index (LTO) ranking (*e.g.*, Taiwan) prefer to foster longer relationships (Hofstede and Bond, 1988). Thus, their primary concern is the interaction with the companies during recovery process. In such situation, any severity change will influence the perceived interactional justice. However, customers in countries with low LTO ranking (*e.g.*, the US) focus on short-term relationships, thereby concerning less interactional justice. In other words, the impact of the severity dimensions should be different between the two countries.

Past research has found that cultural background influences justice perceptions (White and Yanamandram, 2007). Uncertainty Avoidance not only relates to time perception, but also influences justice perception. Researchers have found that people in countries with a high UAI score (*e.g.*, Taiwan) tend to appreciate more on procedural justice (Patterson et al., 2006). The service recovery activities related to Individualism / Collectivism might be different because the US and Taiwan perform at the opposite end

on the Individualism Index (IDV) scores (Hofstede and Hofstede, 2005). While the US ranks near the top one on the IDV, Taiwan ranks 64th, toward the end. People in collectivist countries (*e.g.*, Taiwan) pursue interpersonal harmony and group cohesion in their daily lives (Allen, Takeda, and White, 2005; Bond, 1986), meaning that they anticipate the harmony from their interactions with service companies and from the recovery process. To reach this smooth recovery process and harmonious relationship with the company, they can even sacrifice the result. Therefore, the procedural justice and process satisfaction are perceived to be more important in a collectivist country than in an individualist. In addition, pursuing harmony in relationships usually fosters good relationships in the future. People in countries with a low IDV score (*e.g.*, Taiwan) have also been found to appreciate interactional justice (Patterson et al., 2006). Therefore, interactional justice is considered more important in collectivist countries than in individualist ones. These discussions suggest that the relationships between the justice measures and process and outcome satisfactions are different between these two countries. Considering the discussions related to these three cultural dimensions, Hypotheses 10 is established below:

Hypothesis 10: The overall structural models established from the US and Taiwanese datasets are significantly different.

4. Methodology

4.1. Samples

Undergraduate students from the US and Taiwan were the participants in this study. Past research in service recovery has considered college students as legitimate

customers, who can, thus, serve as participants (Hocutt et al., 2006; Magnini et al., 2007; Ok et al., 2005; Shapiro et al., 2006). Students have also served as respondents in several cross-cultural service studies (Hui, Au, and Fock, 2004; Liu *et al.*, 2001; Patterson *et al.*, 2006; Patterson and Smith, 2003). In addition, because this study also evaluates the cultural dimensions of different countries, undergraduate students, who have experienced limited foreign culture impact, make good represents of their countries.

The Critical Incident Technique (CIT), frequently used in the service context (Gremler, 2004), is used as the primary methodology here. Although the CIT is used as the only methodology in several studies (Bitner, Booms, and Tetreault, 1990; Meuter, Ostrom, Roundtree, and Bitner, 2000), this study uses it in combination with survey methodology. While the survey in this study asks the respondents to describe an incident of either successful or unsuccessful service recovery, the primary analysis comes from the multiple-choice questions in the survey instead of the incident description. In addition, the CIT is a good method not only for evaluating perceived services across different cultures (Stauss and Mang, 1999) but also for investigating service recovery issues (Gremler, 2004). Thus, the CIT is a good fit for this study.

The questionnaire used in this study is based on one developed by Miller *et al.* (2000). The English version of this questionnaire was translated into Traditional Chinese and then back-translated into English to confirm its reliability in the two languages (Rungtusanatham, Forza, Filippini, and Anderson, 1998). In addition, the Chinese and English versions of the survey were further checked by 3 Taiwanese MBA students in a southeastern US university to ensure the consistency between two languages. All

questionnaires were placed on a survey website to facilitate the distribution of the survey in the two countries.

During Fall 2008 and Spring 2009, a total of 206 and 145 responses were obtained in the US and Taiwan respectively. Checking the consistency between two questions, Q1 and Q27 (see Appendix 2-1 for survey questions), resulted in 163 usable responses from the US and 91 from Taiwan. The demographic information of the respondents is listed in Table 2-1. While more Taiwanese students have no work experience, more American students live off-campus. All variables in the demographic information were used as control variables for the recovery outcomes (*i.e.*, repurchase behavior, after-recovery loyalty, process satisfaction, and outcome satisfaction). In other words, all six control variables have a direct path to every recovery outcome variable. The model proposed here is controlled for only recovery outcomes because they are the primary concerns of service companies when they conduct recovery activities. EQS 6.1 for Windows (Build 94) was used to conduct the measurement and path model analyses in this study. The most important benefit of this program is its calculation of the robust estimation, which is useful when data are not multivariate normal (Byrne, 2006). The three cultural index scores, discussed in this study, are reported in Table 2-2. These scores support Hofstede's results in the IBM database indicating that the US students have higher scores on the IDV, while Taiwanese students have higher scores on the UAI and LTO.

Table 2-1: Demographic Information from Respondents

Demographic variables	**U.S. students (163 responses)**	**Taiwan students (91 responses)**
Female	35.0%	44.0%
Male	65.0%	56.0%
Age under 20	4.9%	14.3%
Age 20 and above	95.1%	85.7%
Education under 14 years	3.7%	28.6%
Education 14 years and above	96.3%	71.4%
No job experience	12.9%	30.8%
With some job experiences	87.1%	69.2%
Live on-campus	14.1%	24.4%
Live off-campus	85.9%	75.6%
In-State Students	73.3%	35.2%
Out-of-State Students	26.7%	64.8%

Table 2-2: Cultural Dimension Values from US and Taiwan College Students

Cultural dimensions	**U.S. students 2008 data**	**Taiwan students 2008 data**
Individualism index (IDV)	17.47	4.84
Uncertainty avoidance index (UAI)	-68.62	9.93
Long-term orientation index (LTO)	-.82	62.14

Note: IDV = 35(m04 – m01) + 35(m09 – m06)
UAI = 40(m20 – m16) + 25(m24 – m27)
LTO = 40(m18 – m15) + 25(m28 – m25)
where m04 is the mean score for question VSM0804 *etc.*
all cultural dimension questions are listed in Table A2-2.

4.2. Justice Measurement Model

To establish the three justice factors, the two-stage approach for measurement development proposed by Menor and Roth (2006) was followed in this study (see also in

Aleda V. Roth, Schroeder, Huang, and Kristal, 2008). After a thorough literature review on justice-related service studies, eleven items were established for q-sorting. The results of the q-sorting, including interrater reliability, substantive validity, and overall placement ratio, are detailed in Appendix 2-2. After q-sorting, the nine items listed in Table 2-3 were retained for confirmatory factor analysis (CFA). CFA was conducted to test whether the measurements exhibit good loadings on the three justice dimensions, interactional, procedural, and distributive. Because the data collected in this study do not exhibit multivariate normality, having a multivariate Kurtosis of normalized estimate greater than 5, a robust method was used to analyze the results (Byrne, 2006). The detailed analysis of reliability and discriminant validity can also be found in Appendix 2-2. While reliability is found in both datasets, discriminant validity is found in the US data, but not the Taiwanese data. However, the Traditional Chinese survey is translated from English and back-translated to confirm the reliability of the survey questions. In addition, over-specifying the measurement model is not recommended when the overall model fit has good performance (Byrne, 2006).

Table 2-3: Justice Constructs: Measurement Model Results (Unstandardized Item Loadings)

Scales and associated indicators	US	Taiwan	Total
Interactional Justice (IJ)			
- *I was treated with dignity and respect during the solution process.*	1.00 (--)	1.00 (--)	1.00 (--)
- *The company was open and honest with me during the solution process.*	.97 (21.70)	.84 (7.94)	.88 (16.35)
- *The decisions made during the solution process were adequately explained.*	.98 (22.57)	.78 (5.82)	.93 (14.09)
Procedural Justice (PJ)			
- *The procedures used in response to the service failure were fair.*	1.00 (--)	1.00 (--)	1.00 (--)
- *The time to resolve the service failure was appropriate.*	.93 (10.80)	.54 (5.92)	.76 (11.81)
- *Resolving service failures appears to be the company's standard procedure.*	.87 (9.68)	.67 (7.04)	.76 (11.79)
Distributive Justice (DJ)			
- *The outcomes of the solution process were fair.*	1.00 (--)	1.00 (--)	1.00 (--)
- *The outcomes of the solution process were appropriate.*	1.01 (24.47)	1.07 (34.69)	1.04 (41.55)

Note: The values in the parentheses denote to the critical ratios (CR) of the loadings. For two-tailed tests of significance: CR = |1.645|, p-value < 0.1; CR = |1.960|, p-value < 0.05; CR = |2.576|, p-value < 0.01

Table 2-4: Fit Indexes of Justice Measurement Model

Robust estimation	U.S. students	Taiwan students	Total
χ^2 value	12.24	23.81	11.92
d.f.	17	17	17
p-value	.78	.12	.81
CFI	1.00	.99	1.00
RMSEA	.000	.067	.000
90% RMSEA	(.000, .049)	(.000, .126)	(.000, .037)

Note: See Table 2-3 for scales and items

The individual unstandardized loadings and the overall model fit estimated from the US and Taiwanese datasets are listed in Table 2-3 and Table 2-4. The standardized

loadings, the correlations among the justice constructs, and the overall model fit indexes are also illustrated in Figure 2-3 and 2-4 for the US and Taiwanese datasets, respectively. After switching the fix loadings, all loadings in the US and Taiwanese measurement models are significant at $\alpha = .05$, indicating that all items have good loadings on the justice constructs. Table 2-4 shows the fit indexes for the US and Taiwanese measurement models. The insignificant p-values indicate that both models have a good fit. In addition, their high CFI values (> .95) and low RMSEA values (< .08) also suggest that both datasets have a good fit with the proposed measurement model.

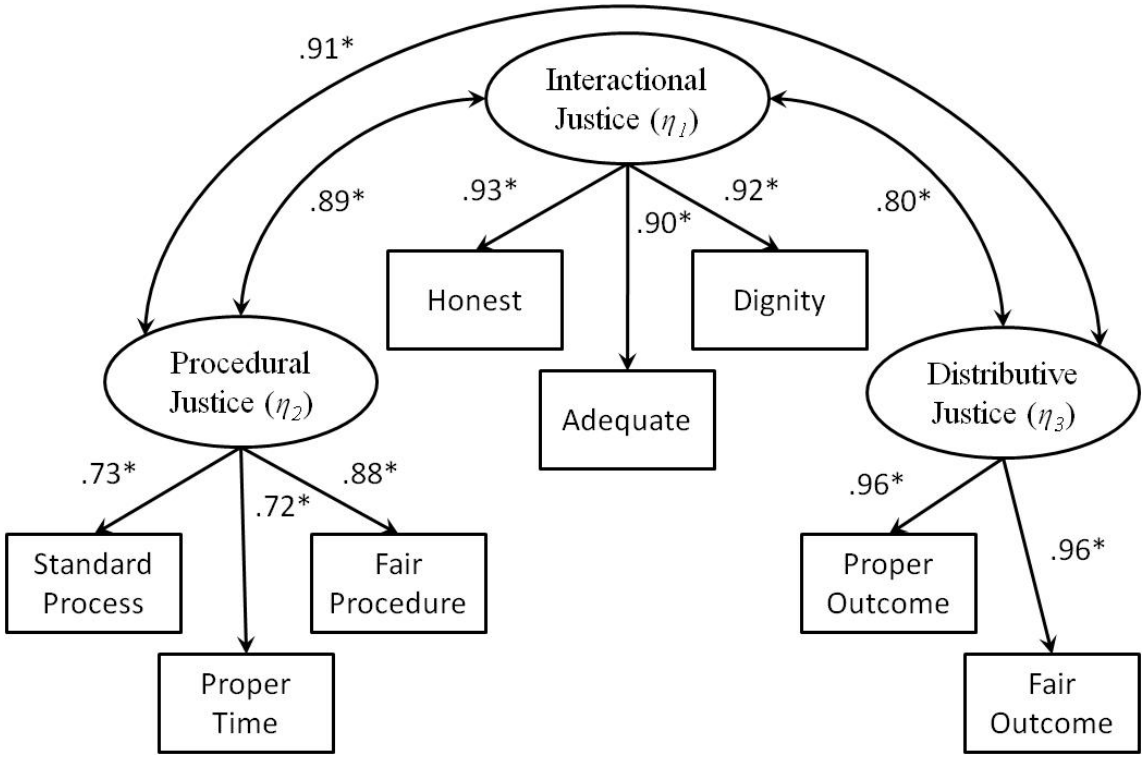

Figure 2-3: The Justice Measurement Model—**US** (S-Bχ^2 value = 12.25; d.f. = 17; p-value = .7850; CFI-R = 1.00; RMSEA-R = 0.00; * $p < 0.05$)

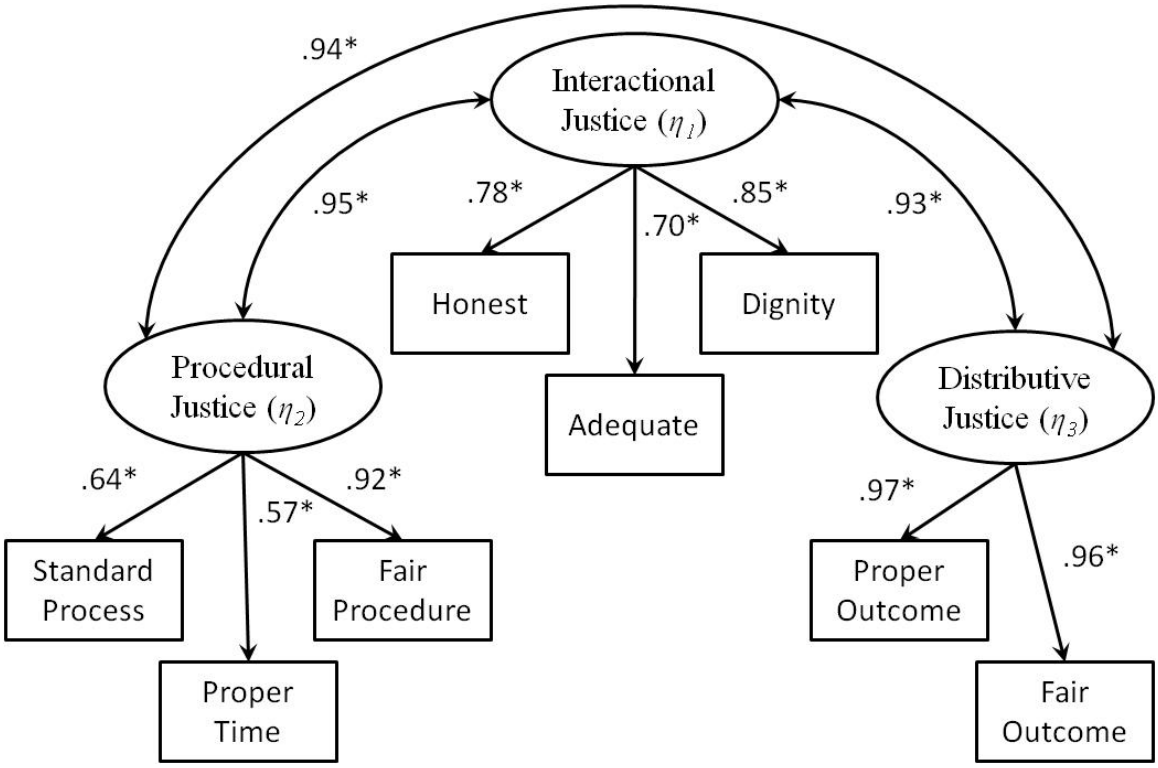

Figure 2-4: The Justice Measurement Model—**Taiwan** (S-Bχ^2 value = 23.8146; d.f. = 17; p-value = .1246; CFI-R = .986; RMSEA-R = .067; * p < 0.05)

The invariance test proposed by various researchers (Byrne, 2006; Rungtusanatham, Ng, Zhao, and Lee, 2008) was used to conduct the group comparisons between the US and Taiwan. First, the baseline model, also called the configural model, is established. This model is illustrated by combining Figure 2-3 and Figure 2-4. Since the model is created directly by joining the measurement models from the US and Taiwan, the performance is good. The primary purpose of establishing this model is to test invariance by comparing it with the constrained model. Second, measurement invariance is tested by constraining all loadings in the measurement model to equivalence between the two countries. The Loadings Constrained Model 1 column in Table 2-5 indicates that the measurement invariance is not valid because the associated constrained model is

significantly different from the baseline model. According to the Langrange Multiplier (LM) test, the loading for "proper time" has the highest χ^2 value differences among constraints, causing the measurement models to differ between the two countries. After calculation, this loading was found to have a scaled S-Bχ^2 value difference of 4.959, significant at $\alpha = .05$. This result is reasonable, since the US and Taiwan have different scores on the Uncertainty Avoidance Index (UAI) (Hofstede and Hofstede, 2005), indicating different time perceptions and definitions for "proper time." Therefore, the constraint for the "proper time" variable loading is freely estimated between the two models. Since this situation meets the partial measurement invariance, meaning that every factor having multiple indicators and at least one constrained loading except the fixed one, the covariance invariance test can proceed (Byrne, 2006).

Table 2-5: Group Comparisons of Measurement Models between US and Taiwan

Model fit indexes	**Loadings constrained model 1[a]**	**Loadings constrained model 2[b]**	**Covariance constrained model[c]**
Constrained Model			
χ^2 value (ML)	64.727	56.874	63.302
χ^2 value (Robust)	45.334	39.948	45.122
d.f.	39	38	41
Unconstrained Model			
χ^2 value (ML)	50.621	50.621	50.621
χ^2 value (Robust)	34.466	34.466	34.466
d.f.	34	34	34
$\Delta\chi^2$ value (ML)	14.106	6.253	12.681
$\Delta\chi^2$ value (Robust Adjusted)	12.273	6.008	11.709
p-value	**.031**	.199	.111

Note: The calculation of the χ^2 difference between two nested models in robust estimation uses the formula suggested by Byrne (2006), and is detailed in the note of Table A2-7.

[a]: All loadings are constrained except fixed loadings (Dignity, Fair Procedure, Fair Outcome)

[b]: All loadings are constrained except fixed loadings and Proper Time

[c]: In addition to b, all correlations among justice constructs are constrained.

The Loadings Constrained Model 2 column in Table 2-5 shows that the measurement invariance is met after the release of the constraint of the "proper time" variable loading. Third, the constraints for factor covariance are added. The Covariance Constrained Model column in Table 2-5 illustrates that the measurement models between the US and Taiwan are invariant. Therefore, the two datasets can be pooled to estimate the overall measurement model loadings and the overall model fit of the measurement model. Again, the overall measurement model estimated from the combined US and Taiwan samples shows large and significant loadings and a good fit as shown in Tables 3 and 4. Figure 2-5 illustrates the measurement model with standardized coefficients estimated from all the data.

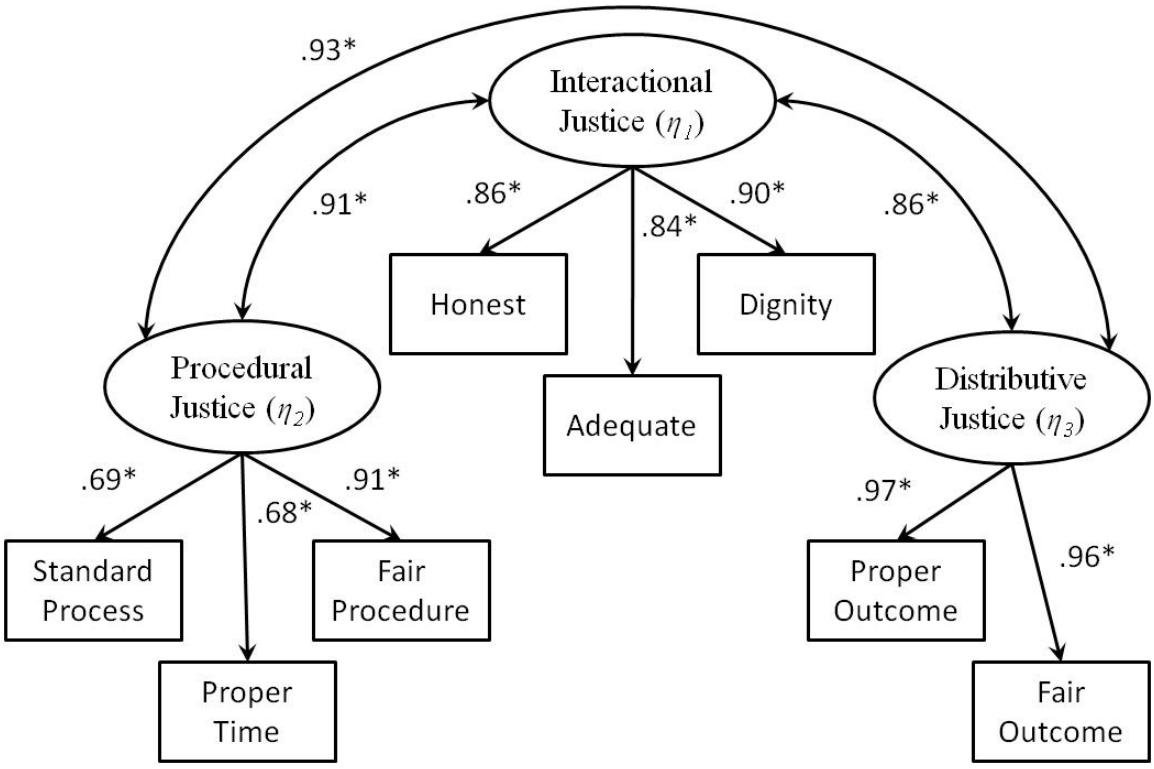

Figure 2-5: The Justice Measurement Model—**TOTAL** (S-Bχ^2 value = 11.9156; d.f. = 17; p-value = .8052; CFI-R = 1.00; RMSEA-R = .000; * $p < 0.05$)

Since the invariance of the measurement models from the US and Taiwanese datasets is validate, the next step is to investigate the invariant test of the structural models, as illustrated in Figure 2-2, from both datasets. Before beginning the country comparison, Figure 2-2 needs to be explained. Although not illustrated in the figure, the correlations among the three severity dimensions as well as the correlations between the two disturbances of the procedural and distributive justice are established in the model. Since these severity dimensions relate to the same recovery process, they should exhibit correlations. The correlation between the two disturbances indicates the relationships between these two justice measurements beyond that accounted for by the same independent variables. These relationships are not illustrated in the figure because they are not the primary concern of the proposed model. The proposed service recovery model can be formulated by the following matrix.

$$Y = \Gamma Y + \Gamma X + E \qquad [1a]$$

$$\begin{bmatrix}\eta_1\\ \eta_2\\ \eta_3\\ y_1\\ y_2\\ y_3\\ y_4\end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0\\ \beta_{\eta_2\eta_1} & 0 & 0 & 0 & 0 & 0 & 0\\ \beta_{\eta_3\eta_1} & 0 & 0 & 0 & 0 & 0 & 0\\ 0 & \gamma_{y_1\eta_2} & 0 & 0 & 0 & 0 & 0\\ 0 & 0 & \gamma_{y_2\eta_3} & \gamma_{y_2y_1} & 0 & 0 & 0\\ 0 & 0 & 0 & \gamma_{y_3y_1} & \gamma_{y_3y_2} & 0 & 0\\ 0 & 0 & 0 & \gamma_{y_4y_1} & \gamma_{y_4y_2} & \gamma_{y_4y_3} & 0\end{bmatrix}\begin{bmatrix}\eta_1\\ \eta_2\\ \eta_3\\ y_1\\ y_2\\ y_3\\ y_4\end{bmatrix}$$

$$+\begin{bmatrix}\gamma_{\eta_1x_1} & \gamma_{\eta_1x_2} & \gamma_{\eta_1x_3}\\ \gamma_{\eta_2x_1} & \gamma_{\eta_2x_2} & \gamma_{\eta_2x_3}\\ \gamma_{\eta_3x_1} & \gamma_{\eta_3x_2} & \gamma_{\eta_3x_3}\\ 0 & 0 & 0\\ 0 & 0 & 0\\ 0 & 0 & 0\\ 0 & 0 & 0\end{bmatrix}\begin{bmatrix}x_1\\ x_2\\ x_3\end{bmatrix} + \begin{bmatrix}\zeta_1\\ \zeta_2\\ \zeta_3\\ \varepsilon_1\\ \varepsilon_2\\ \varepsilon_3\\ \varepsilon_4\end{bmatrix} \qquad [1b]$$

where ζ is the disturbance term of the justice factors

ε is the error term of the dependent variables

5. Results and Discussions

The analysis of the service recovery model proposed here, as illustrated in Figure 2-2, is given in this section. First, the comparison of the two countries based on the proposed model indicates that the path models are significantly different for the US and the Taiwanese datasets. As a result, the US and Taiwan path models are analyzed separately. Next, two competing models are compared with the service recovery model proposed here. The discussion of the common method bias concludes this section.

5.1. Country Comparison

The structural models can be tested for invariance after partial measurement invariance is established. Again, the first step in testing for structural invariance is to constrain all loadings, except the fixed loadings and the loading of the "proper time" variable. The Loadings Constrained Model column in Table 2-6 supports the invariance test because the p-value indicates that the constrained model is not significantly different from the unconstrained model. Next, all paths in the path models from the two countries are constrained to be equal to test the structural invariance. While the results in the Structural Paths Constrained Model 1 column compares the constrained structural model to the unconstrained model, the results in the Structural Paths Constrained Model 2 column compares it to the loadings constrained model. Both results indicate that the structural invariance is not met between the two countries. In other words, the two countries have significantly different structural models, supporting Hypothesis 10.

Table 2-6: Group Comparisons of Structural Models between US and Taiwan

Model fit indexes	**Loadings constrained model[a]**	**Structural paths constrained model 1[b]**	**Structural paths constrained model 2[c]**
Constrained Model			
χ^2 value (ML)	241.677	289.866	289.866
χ^2 value (Robust)	200.674	240.535	240.535
d.f.	152	171	171
Less Constrained Model			
χ^2 value (ML)	235.139	235.139	241.677
χ^2 value (Robust)	194.321	194.321	200.674
d.f.	148	148	152
$\Delta\chi^2$ value (ML)	6.538	54.727	48.189
$\Delta\chi^2$ value (Robust Adjusted)	6.588	46.650	39.787
p-value	.159	**.003**	**.004**

Note: The calculation of the χ^2 difference between two nested models in robust estimation uses the formula suggested by Byrne (2006), and is detailed in the note of Table A2-7.

[a]: All loadings are constrained except fixed loadings and Proper Time and this model is compared to uncontrained model

[b]: In addition to a, all structural paths are constrained, and this model is compared to unconstrained model

[c]: In addition to a, all structural paths are constrained, and this model is compared to the Loadings Constrained Model

5.2. US Path Model

The results of the US path model are shown in Figure 2-6. The descriptive statistics for all the factors and variables including the correlations among them are listed in Table A2-8 in Appendix 2-3. The proposed service recovery path model exhibits a good fit with a CFI of 0.971 and an RMSEA of 0.046. Both indexes meet the suggested cutoff points, higher than 0.95 for CFI and lower than 0.06 for RMSEA (Hu and Bentler, 1998, 1999), suggesting the data have a good fit with the proposed model. Although the p-value for the overall model is significant, the ratio of the χ^2 value and the degree of freedom is less than 2, also indicating the good fit of the model. Figure 2-6 also shows the standardized parameters of the primary paths for the model.

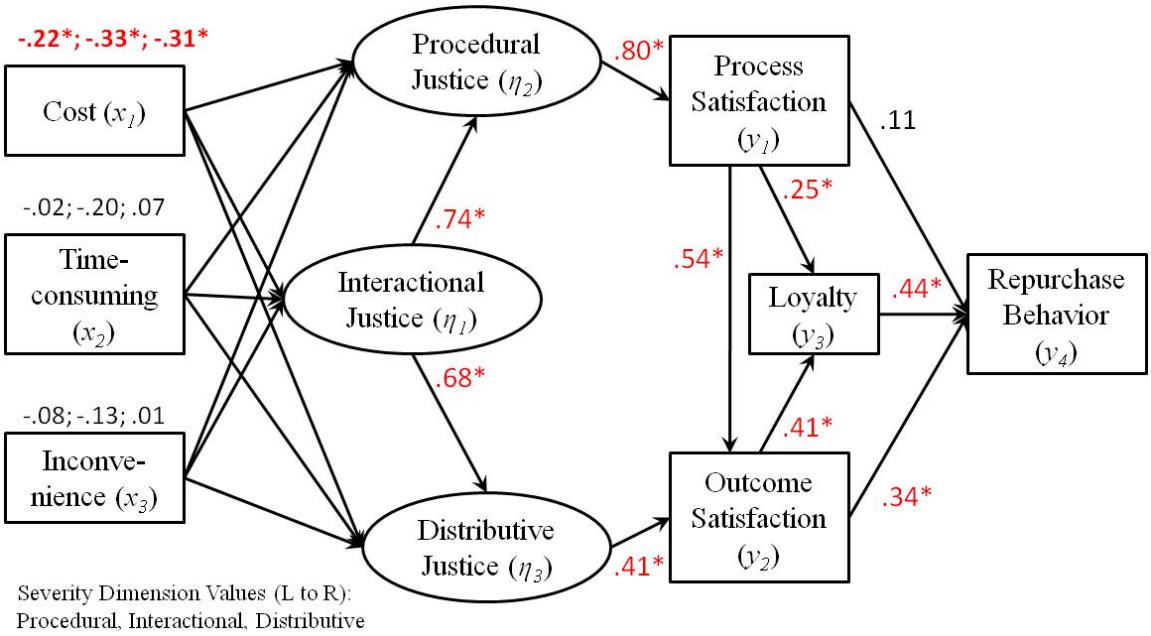

Figure 2-6: The Service Recovery Path Model—**US** (S-Bχ^2 value = 203.2272; d.f. = 154; p-value = .0048; CFI-R = 0.971; RMSEA-R = 0.046; * p < 0.05)

For the paths from the severity dimensions (i.e., cost, time, and inconvenience) to the justice dimensions, only those from cost are significant in the model, while all paths from time and inconvenience are not significant. This result supports Hypothesis 1 but not Hypotheses 2 and 3. The significance of these paths might result from the respondents surveyed. College students tend to be more concerned with cost than the other two severity dimensions. Most students will spend more time or accept inconvenience to obtain less expensive services, indicating that if they feel they spent more money after recovery, they probably do not feel justice during recovery. Thus, the only significant paths are from the severity of cost to the three justice dimensions.

The paths related to the justice dimensions (i.e., interactional, procedural, and distributive justice) are all significant at $\alpha = 0.05$, indicating Hypotheses 4, 5, and 6 are supported. Among the paths connecting service recovery outcomes (i.e., repurchase

behavior, after-recovery loyalty, process satisfaction, and outcome satisfaction), only the path between process satisfaction and repurchase behavior is not significant at the $\alpha = 0.05$ level. In other words, Hypotheses 7c is not supported by the model. The different significances of the paths from the two satisfaction variables to repurchase behavior suggest differences between process and outcome satisfactions under service recovery situations. If these two are similar, they should have a significant impact on repurchase behavior at the same time. While outcome satisfaction has both a significant and direct impact on repurchase behavior, process satisfaction has significant impact on repurchase behavior through after-recovery loyalty and outcome satisfaction based on the significant indirect effect of process satisfaction on repurchase behavior. Table 2-7 (table follows Section 5.3) summarizes the unstandardized parameter estimates and the significance of the hypothesized paths, while the direct, indirect, and total effects of the model seen in Table 2-8 (table follows Section 5.3) provide a detailed view of the relationships among the variables and factors.

5.3. Taiwan Path Model

The descriptive statistics for the factors and variables collected from the Taiwanese dataset are shown in Table A2-9 in Appendix 2-3, which also lists the correlations among them. Figure 2-7 shows the service recovery path model for Taiwan. While the CFI is 0.961, the RMSEA is 0.053, indicating the overall fit for the Taiwan's model is good because these two values meet the cutoff points suggested by Hu and Bentler (1998; 1999). In addition, the ratio of the χ^2 value and the degree of freedom is

smaller than 2, also indicating a good model fit. However, several individual paths are not significant in the model.

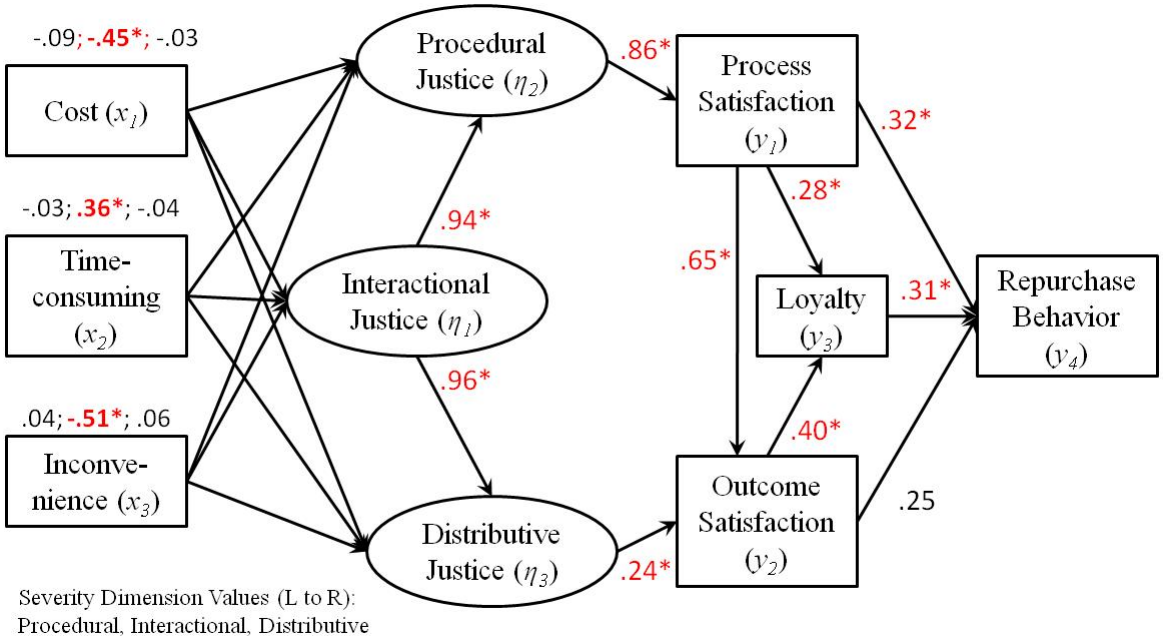

Figure 2-7: The Service Recovery Path Model—**Taiwan** (S-Bχ^2 value = 188.8219; d.f. = 154; p-value = .0294; CFI-R = 0.961; RMSEA-R = 0.053; * p < 0.05)

As illustrated in Figure 2-7, the paths from the severity dimensions to the justice measures are not all significant. Only the paths leading to interactional justice are significant, suggesting Taiwan, a collectivist culture, emphasizes interactional justice more than the other two, results similar to those results found by Patterson and his colleagues (2006). Among the three significant paths leading to interactional justice, time has a positive coefficient, indicating that Taiwanese customers feel more justice if they spend more time during recovery. This is not expected, because conventional thinking is the less time during recovery the better. Taiwan's high score on the UAI might explain this situation. Research finds that people in countries with a high UAI score regard "time as money" (Hofstede and Hofstede, 2005). Thus, Taiwanese customers may appreciate a

service company's recovery effort if it spends much time on recovery process. From the results, only Hypotheses 1b and 3b are supported.

In addition, Taiwan, among several countries influenced by the philosophy of Confucius, focuses on long-term relationships, and Taiwanese also emphasize face-saving. Because of these characteristics, interactional justice is important to most Taiwanese. Fair interactional justice can result in procedural and distributive justice, and at the same time, bad result (*e.g.*, higher cost, less convenience) causes a negative perception of interactional justice. As this analysis suggests, severity dimensions influence only interactional justice.

The paths among the justice measures and from the justice measures to satisfaction are significant, indicating Hypotheses 4, 5, and 6 are supported in Taiwanese model. For paths connecting outcome variables, outcome satisfaction does not significantly influence the repurchase behaviors, while process satisfaction has a significant impact on the repurchase behavior, illustrating a situation opposite from that found for the US model. Thus, Hypothesis 7c is supported but not Hypothesis 8b in Taiwanese model. This situation reaffirms that process and outcome satisfactions have a different impact on repurchase behavior. In addition, it also indicates that cultural differences between the US and Taiwan. The summarized results of the hypothesis analysis for the Taiwanese model are also listed in Table 2-7, and the details of direct, indirect, and total effects are listed in Table 2-9.

The different significances of the paths in the service recovery model proposed here are found in the results shown above. According to them, Taiwanese focus on

interactional justice and the recovery process, while Americans emphasize cost and recovery outcome. Given the cultural differences between the US and Taiwan, this result is to be expected. A story in the Bible (Matthew 21: 28-31) illustrates the Americans focus on the outcome and the Taiwanese focus on the process, resulting from the individualist US and the collectivist Taiwan (Hofstede and Hofstede, 2005).

> *"What do you think? There was a man who had two sons. He went to the first and said, 'Son, go and work today in the vineyard.'*
> *"'I will not,' he answered, but later he changed his mind and went.*
> *"Then the father went to the other son and said the same thing. He answered, 'I will, sir,' but he did not go.*
> *"Which of the two did what his father wanted?"*
> *"The first," they answered…*

While most Americans think the first son is good, the second son is more acceptable in most Asian countries (Hofstede and Hofstede, 2005). Although the first son did what his father asked in the end, his answer in the beginning destroyed the harmony among the family members. Thus, in a service recovery situation, when companies provide harmony during the interactional process, people in collectivist countries accept a compromised recovery outcome. Based on these discussions, the relationships related to interactional justice, procedural justice, distributive justice, as well as process and outcome satisfaction are concluded to be different between the two countries. In past research (Patterson *et al.*, 2006), interactional justice was found to be the most important for collectivists. While people in countries with a high Uncertainty Avoidance Index (UAI) tend to appreciate procedural justice or process satisfaction (Patterson *et al.*, 2006), it is reasonable to suggest that people in countries with a low UAI tend to appreciate

distributive justice or outcome satisfaction. The results reported here confirm the significant differences between the US and Taiwan in relation to these factors.

Table 2-7: Path Model Empirical Results: Unstandardized Parameter Estimates and Significance

Outcomes (US r^2, Taiwan r^2)	**Predictor**	**Hypothesis**	**Predicted sign**	**US**		**Taiwan**	
				Parameter estimates	**Support**	**Parameter estimates**	**Support**
Interactional Justice	Cost	1a	−	-.281***	Yes	-.407***	Yes
(.301, .370)	Time-Consuming	1b	−	-.176*	Weak	.458***	No
	Inconvenience	1c	−	-.116	No	-.573***	Yes
Procedural Justice	Cost	2a	−	-.177***	Yes	-.083	No
(.873, .939)	Time-Consuming	2b	−	-.018	No	-.035	No
	Inconvenience	2c	−	-.066	No	.043	No
	Interactional Justice	4a	+	.682***	Yes	.965***	Yes
Distributive Justice	Cost	3a	−	-.265***	Yes	.028	No
(.711, .863)	Time-Consuming	3b	−	.059	No	-.051	No
	Inconvenience	3c	−	.006	No	.073	No
	Interactional Justice	4b	+	.675***	Yes	1.075***	Yes
Process Satisfaction (.649, .784)	Procedural Justice	5	+	.973***	Yes	.913***	Yes
Outcome Satisfaction	Distributive Justice	6	+	.491***	Yes	.233**	Yes
(.774, .778)	Process Satisfaction	7a	+	.576***	Yes	.649***	Yes
After-Recovery Loyalty	Process Satisfaction	7b	+	.273**	Yes	.309**	Yes
(.410, .516)	Outcome Satisfaction	8a	+	.407***	Yes	.456***	Yes
Repurchase Behavior	Process Satisfaction	7c	+	.144	No	.482***	Yes
(.635, .622)	Outcome Satisfaction	8b	+	.425***	Yes	.371*	Weak
	After-Recovery Loyalty	9	+	.541***	Yes	.412**	Yes

Note: *** p<.01; ** p<.05; * p<.1

Table 2-8: Effects of Exogenous and Prior Endogenous Variables (unstandardized values, US respondents)

Effect of/on	**Interactional Justice**			**Procedural Justice**			**Distributive Justice**		
	D	**I**	**T**	**D**	**I**	**T**	**D**	**I**	**T**
Cost	-.41		-.41	-.08	-.39	-.48	.03	-.44	-.41
t-statistic (Robust)	-4.21		-4.21	-1.13	-3.34	3.18	.35	-3.33	2.52
Time Consuming	.46		.46	-.04	.44	.41	-.05	.49	.44
t-statistic (Robust)	2.68		2.68	-.29	2.26	1.89	-.41	2.38	1.81
Inconvenience	-.57		-.57	.04	-.55	-.51	.07	-.62	-.54
t-statistic (Robust)	-4.19		-4.19	.36	-3.23	-2.33	.65	-3.41	-2.51
Interactional Justice				.97		.97	1.08		1.08
t-statistic (Robust)				6.50		6.50	7.30		7.30

Note: For two-tailed tests of significance: CR = |1.645|, p-value < .1; CR = |1.960|, p-value < .05; CR = |2.576|, p-value < .01
D: Direct effect; I: Indirect effect; T: Total effect

Table continues on next page

Table 2-8 (Cont'd): Effects of Exogenous and Prior Endogenous Variables (unstandardized values, US respondents)

Effect of/on	**Process satisfaction**			**Outcome satisfaction**			**Loyalty**			**Repurchase behavior**		
	D	**I**	**T**	**D**	**I**	**T**	**D**	**I**	**T**	**D**	**I**	**T**
Cost		-.36	-.36		-.43	-.43		-.27	-.27		-.38	-.38
t-statistic (Robust)		-4.89	-4.89		-5.17	-5.17		-4.57	-4.57		-4.82	-4.82
Time Consuming		-.13	-.13		-.11	-.11		-.08	-.08		-.11	-.11
t-statistic (Robust)		-1.61	-1.61		-1.18	-1.18		-1.30	-1.30		-1.26	-1.26
Inconvenience		-.14	-.14		-.12	-.12		-.09	-.09		-.12	-.12
t-statistic (Robust)		-1.62	-1.62		-1.27	-1.27		-1.46	-1.46		-1.43	-1.43
Interactional Justice		.66	.66		.71	.71		.47	.47		.65	.65
t-statistic (Robust)		9.38	9.38		9.44	9.44		6.93	6.93		7.62	7.62
Procedural Justice	.97		.97		.56	.56		.49	.49		.65	.65
t-statistic (Robust)	12.24		12.24		6.99	6.99		5.98	5.98		6.19	6.19
Distributive Justice				.49		.49		.20	.20		.32	.32
t-statistic (Robust)				5.21		5.21		2.91	2.91		3.29	3.29
Process Satisfaction				.58		.58	.27	.23	.51	.14	.52	.66
t-statistic (Robust)				7.03		7.03	2.43	3.34	6.72	1.05	5.01	6.92
Outcome Satisfaction							.41		.41	.43	.22	.65
t-statistic (Robust)							3.70		3.70	3.02	2.93	4.17
Loyalty										.54		.54
t-statistic (Robust)										5.10		5.10

Note: For two-tailed tests of significance: CR = |1.645|, p-value < .1; CR = |1.960|, p-value < .05; CR = |2.576|, p-value < .01
D: Direct effect; I: Indirect effect; T: Total effect

Table 2-9: Effects of Exogenous and Prior Endogenous Variables (unstandardized values, Taiwan respondents)

Effect of/on	**Interactional Justice**			**Procedural Justice**			**Distributive Justice**		
	D	**I**	**T**	**D**	**I**	**T**	**D**	**I**	**T**
Cost	-.41		-.41	-.08	-.39	-.48	.03	-.44	-.41
t-statistic (Robust)	-4.21		-4.21	-1.13	-3.34	3.18	.35	-3.33	2.52
Time Consuming	.46		.46	-.04	.44	.41	-.05	.49	.44
t-statistic (Robust)	2.68		2.68	-.29	2.26	1.89	-.41	2.38	1.81
Inconvenience	-.57		-.57	.04	-.55	-.51	.07	-.62	-.54
t-statistic (Robust)	-4.19		-4.19	.36	-3.23	-2.33	.65	-3.41	-2.51
Interactional Justice				.97		.97	1.08		1.08
t-statistic (Robust)				6.50		6.50	7.30		7.30

Note: For two-tailed tests of significance: CR = |1.645|, p-value < .1; CR = |1.960|, p-value < .05; CR = |2.576|, p-value < .01
D: Direct effect; I: Indirect effect; T: Total effect

Table continues on next page

Table 2-9 (Cont'd): Effects of Exogenous and Prior Endogenous Variables (unstandardized values, Taiwan respondents)

Effect of/on	**Process Satisfaction**			**Outcome Satisfaction**			**Loyalty**			**Repurchase Behaviors**		
	D	**I**	**T**	**D**	**I**	**T**	**D**	**I**	**T**	**D**	**I**	**T**
Cost		-.43	-.43		-.38	-.38		.31	.31		-.48	-.48
t-statistic (Robust)		-3.22	-3.22		-3.06	-3.06		-3.01	-3.01		-3.17	-3.17
Time Consuming		.37	.37		.34	.34		.27	.27		.42	.42
t-statistic (Robust)		1.93	1.93		1.89	1.89		1,93	1,93		1.92	1.92
Inconvenience		-.47	-.47		-.43	-.43		-.34	-.34		-.52	-.52
t-statistic (Robust)		-2.37	-2.37		-2.43	-2.43		-2.46	-2.46		-2.42	-2.42
Interactional Justice		.88	.88		.82	.82		.65	.65		1.00	1.00
t-statistic (Robust)		6.91	6.91		6.81	6.81		5.53	5.53		6.32	6.32
Procedural Justice	.91		.91		.59	.59		.55	.55		.89	.89
t-statistic (Robust)	16.07		16.07		5.54	5.54		5.59	5.59		7.25	7.25
Distributive Justice				.23		.23		.11	.11		.13	.13
t-statistic (Robust)				2.22		2.22		1.58	1.58		1.53	1.53
Process Satisfaction				.65		.65	.31	.30	.61	.48	.49	.97
t-statistic (Robust)				5.83		5.83	2.12	2.90	5.96	2.69	4.32	7.91
Outcome Satisfaction							.46		.46	.37	.19	.56
t-statistic (Robust)							3.00		3.00	1.82	1.69	2.85
Loyalty										.41		.41
t-statistic (Robust)										2.25		2.25

Note: For two-tailed tests of significance: CR = |1.645|, p-value < .1; CR = |1.960|, p-value < .05; CR = |2.576|, p-value < .01
D: Direct effect; I: Indirect effect; T: Total effect

5.4. Competing Models

In the service recovery model proposed here as illustrated in Figure 2-6 (US) and 2-7 (Taiwan), interactional justice has direct paths leading to both procedural and distributive justice measures but no direct paths to the satisfaction measures. This situation is proposed because it is believed interactional justice represents the service encounter and influences recovery outcomes through the other two justice measures. However, others might think that interactional justice also has a direct impact on satisfaction measurements. To explore this condition, Competing Model 1 as illustrated in Figure A2-1 in Appendix 2-4 is established to introduces two paths from interaction justice to both process and outcome satisfaction. Analysis indicates, however, that the proposed model is better than Competing Model 1. Although the differences between the χ^2 values of the two models are not significant, indicating that their overall performance is similar, Competing Model 1 has two more paths than the proposed model. Since parsimony is considered a virtue of a good theory (Wacker, 1998), the proposed model is preferred. In addition, the two paths from interactional justice to satisfactions are not significant for the US dataset. Thus, interactional justice should impact satisfaction measures indirectly, rather than directly, through the other two justice measures.

Competing Model 2, illustrated in Figure A2-2 in Appendix 2-4, adds one path from procedural justice to outcome satisfaction and one from distributive justice to process satisfaction. This model is used to explore whether the procedural or distributive justice has a significant impact on both process and outcome satisfaction. Again, it is found that the performance of Competing Model 2 is similar performance to the model

proposed in this study. However, because of the two additional paths in Competing Model 2 and the parsimony virtue, the proposed model is considered better.

The competing models for Taiwanese dataset are illustrated in Figure A2-3 and A2-4 in Appendix 2-4. While the overall model performance were similar between the two competing models and the proposed service recovery model, the significance of the paths were different. In Competing Model 1, the path from the procedural justice to the process satisfaction became insignificant, but the added path from interactional justice to the process satisfaction was significant. In Competing Model 2, the path from the distributive justice to the outcome satisfaction became insignificant. However, these results, possibly suggesting the close relationship between interactional justice and procedural justice and the insignificance of distributive justice, need further investigations. The results from both competing models, analyzed separately by the US and Taiwanese datasets, can be found in Appendix 2-4.

5.5. Common Method Bias

Common method bias which may exist when single respondent is used for data collection, must be considered in relation to the theoretical model because it provides "a rival explanation for the correlation observed between the measures" (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003, p. 879). Several statistical methods have been proposed to detect the common method bias after data collection, the most wide-spread method being Harmon's single-factor test, which indicates whether all variables load to only one factor. To conduct this test here, all variables used in the path model are loaded

to one factor. The results for both the US and Taiwanese models show a moderate fit with the CFI at 0.815 and 0.904 and the RMSEA at 0.133 and 0.102 respectively. These fit index values are much worse (*i.e.*, lower in the CFI, higher in the RMSEA) than the proposed model, indicating little possibility of common method variance.

Second, a marker variable test was used to investigate the correlations between the marker and other variables based on the suggestions of Lindell and Whitney (2001). A variable recording the way companies found the failure was chosen as the marker variable since it does not have any theoretical relationships with other variables (Weng and Miller, 2009). The average correlation was found to be -0.001 and the average p-value 0.616, both suggesting no common method bias in the US data. The same process was used on the Taiwanese data with no common method bias being found because the average correlation was found to be 0.035 and the average p-value 0.547.

Third, a method suggested by Podsakoff and his colleagues (2003) is used to check for common method bias. This method, one type of multi-trait, multi-method strategy, assumes one common method factor leading to all items under other factors such as the justice measures in the study reported here. The path model with the common method factor does not include control variables because they are not the primary concerns in the analysis of the common method bias. All loadings for the theoretical factors are significant and larger than the loadings, which are not significant, for the common method factor. In addition, the significance of the structural paths is not changed in the US model, while the significance of only three paths—after-recovery loyalty to repurchase behavior, process satisfaction to after-recovery loyalty, and distributive factor

to outcome satisfaction—in the Taiwanese model is changed from significant to insignificant. However, the values of the average variance extracted from the theoretical factors are larger than that from the common method factors in both dataset, indicating that the theoretical factors extracted more variances than the common method factor. Based on the results of these three methods, common method bias does not appear to influence the proposed model. The detailed standardized loadings for theoretical factors (*i.e.*, interactional, procedural, and distributive) and the common method factor for both the US and Taiwanese models can be found in Appendix 2-5.

6. Managerial Implications and Future Research

6.1. Limitations and Future Research

This research uses survey results from the CIT to investigate the relationships among three groups of factors, after-recovery severity dimensions, justice measures, and recovery outcomes. However, the primary recovery activities of apology and fair fix were not investigated. Future research could focus on these activities, exploring the relationship between them and the service failure severity of the problem. Including the recovery activities in the model would provide additional information for companies to use in establishing their recovery processes.

This research recruited student respondents for the survey questions. While students are legitimate consumers and have little experience of other cultures, expanding the respondent pool could validate the findings of this study. For example, the results indicate only the severity of cost has a significant impact on the justice dimensions in the

US model, probably because the primary participants in this study were students. For respondents from other occupations, time or inconvenience might be more important. However, this relationship needs further study. By including respondents other than students in the Taiwanese model, researchers could investigate whether the significant paths from severity dimensions to interactional justice can be generalized across the country.

In this study, the measurement model for the Taiwanese dataset does not have good discriminant validity. Although the Traditional Chinese survey is translated and back-translated to confirm the reliability of the survey questions and over-specifying measurement model is not recommended, the lack of discriminant validity is a concern. Further statistical methodology based on item response theory can be used to investigate the measurement equivalence between two languages (Drasgow and Probst, 2005). In addition, researchers can create measurement items for justice constructs in Traditional Chinese and translate to English to check the validity. Future research can also examine whether three justice dimensions are distinguishable in Asian countries.

This study collects data from only two countries, the US and Taiwan. Although Hofstede's cultural dimensions are used to explain the differences between the US and Taiwan service recovery models, collecting data from more countries could confirm the analysis discussed in this study. Researchers could explore the effect of a broader range of cultural backgrounds on the proposed model. As service companies expand their business globally, they need to consider modifications in their daily business practices base on the cultures. Although researchers have proposed the importance of cultural

difference in management (Hofstede, 1994), few studies have addressed this issue. Before applying the proposed model to different countries, researchers should investigate the cultural impact on it. Using more countries to test the service recovery model proposed here can establish more fully the relationships between Hofstede's cultural dimensions and the service recovery model.

The design of the study reported here is to ask respondents select a service recovery incident, excluding the incidents in which customers did not complain to the service companies. Because companies did not receive these complaints from their customers, they cannot, first, recover these customers, and second, know about the problems, thereby solving them. Therefore, companies should establish a feedback system to collect information from both complaining and not complaining customers. Few studies have investigated this issue(Smith, Karwan, and Markland, 2009); thus, future research is necessary to analyze and build the mechanism of a feedback system, which can collect all information from every possible sources through all channels, evaluate the information collected, recover when failures are detected, and create organizational knowledge, thereby improving or creating service processes that prevent problems from reoccurring.

6.2. Managerial Implications

This study proposes a new service recovery model based on justice theory, analyzing the process and outcome satisfactions individually. The separation of these two satisfactions can help to explain the service recovery paradox. In addition, the significant

differences between the US and the Taiwanese models suggest that service companies cannot implement the same recovery practices across countries. These findings have great implications important for service companies.

First, the model proposed here shows differences between process and outcome satisfaction, indicating that service companies should consider both satisfaction measures when evaluating their recovery performance. While one satisfaction has a direct impact on repurchase behavior, the other one has an indirect impact on this variable. Therefore, service companies should evaluate their recovery activities by asking their customers about both process and outcome satisfactions instead of only overall satisfaction. By understanding these different satisfactions, companies can improve their recovery practices accordingly.

Second, the model indicates that process and outcome satisfaction can be improved through procedural and distributive justice, respectively. This finding confirms the differences between the process and outcome satisfaction measures. Based on the proposed model, when service companies find poor results in customer process satisfaction, they should work toward making their recovery process standardized and fair and, at the same time, keep the process within an appropriate amount of time. If service companies determine customer outcome satisfaction is poor, they should improve the perceived appropriateness and fairness of the recovery outcomes.

Third, the model confirms the importance of interactional justice among the three justice dimensions. By emphasizing the importance of the service encounter, service recovery, one kind of service, focuses on this important dimension of interactional justice.

If the employees in service companies are honest and fair, explain the decision adequately during the recovery process, and treat customers with dignity, they will not only improve the perceived interactional justice but also improve both procedural and distributive justice at the same time.

Fourth, service companies should be aware that cost is the most important factor during recovery activities when they deal with student customers in the US. Thus, dealing with these customers during recovery activities, service companies should focus on reducing the cost while keeping the time and inconvenience involved at a reasonable level. If service companies can reduce the cost after recovery, their student customers will perceive high level of justice in all three dimensions.

Fifth, service companies should adopt different recovery practices in different countries. From the results found in this study, Americans focus on recovery outcome, while the Taiwanese emphasize the recovery process. Thus, service companies should provide good recovery outcomes to their US customers and a good recovery process to their Taiwanese ones. In addition, interactional justice is more important in Taiwan than in the US. In Taiwan, the effects of interactional justice on the other two are higher than in the US, and the severity dimensions influence only interactional justice. Thus, service companies should ensure their employees in Taiwan have good interactional skill training to improve all three justice measures. Third, in the US cost has a significant and negative impact on all three justice measures, while in Taiwan time has a significant and positive impact on interactional justice. These findings also suggest different practices are needed for companies dealing with the US and Taiwanese customers. While companies in the US

should focus on reducing the cost, companies in Taiwan should increase customer perception of the time companies spent on the recovery process.

7. Conclusions

Although past research has suggested recovery strategies should be modified depending on customer loyalty and failure severity (Craighead *et al.*, 2004; Worsfold *et al.*, 2007), few studies have explored this issue in relation to cultural background. The service recovery model proposed in this study provides not only evidence of cultural differences in responses to service recovery but also a plausible explanation for the service recovery paradox. While several studies regard justice measures as primary factors and treat them similarly in service recovery, the model proposed here indicates that these justice measures have different impact on the recovery outcomes.

This research reports the development of a new service recovery model. Based on justice theory, it includes three primary groups of factors in service recovery, severity dimensions, justice measures, and recovery outcomes. After developing the justice measurement model, this study conducts country comparisons using datasets from the US and Taiwan. While the justice measurement model is invariant between these two countries, the service recovery model performs differently in the US and Taiwan. These comparisons provide significant evidences of cultural differences, suggesting service companies need to adjust their recovery practices based on the cultural background. While one-fit-all practices might reduce the complication of recovery processes, reshaping them is the most beneficial strategy for handling international customers.

Because of the cultural differences, the service recovery model was evaluated by individually fitting the datasets from the two countries. The results indicate that several differences between the two countries. First, considering the relationships between after-recovery failure severity dimensions and justice measures, cost was found to be the most important for the US while interactional justice was the most important for the Taiwanese model. In the US, only the severity of cost influences all three justice measure, while in Taiwan, all three severity dimensions influence interactional justice but not the other two.

While the impact of three justice dimensions is significant on their directly dependent variables, several relationships were found to be different between the two countries. First, the impact of interactional justice on distributive justice is stronger in the Taiwanese model, suggesting the importance of interactional justice in Taiwan. This result is consistent with past research (Patterson *et al.*, 2006). Second, the influence of distributive justice on outcome satisfaction is stronger in the US, suggesting American customer appreciation of recovery results. Process satisfaction was also found to differ in its impact on repurchase behavior between the two countries. These results provide evidence that people in collectivist countries (*e.g.,* Taiwan) are more concern about processes while people in individualist countries (*e.g.,* US) consider results more important (Hofstede and Hofstede, 2005).

The difference in the influence of process and outcome satisfaction on repurchase behavior in the two countries suggests the differences between these two satisfactions. Past studies traditionally have combined process and outcome satisfactions into one factor for evaluation. This may be the reason for the inconclusive results found in service

recovery paradox studies. Therefore, the consistent results for the service recovery paradox might be achieved by distinguishing between process and outcome satisfactions.

This study investigating cultural factors in service recovery is relevant to today's business practices. Service recovery, which is gaining increasing notices in most companies (Michel, Bowen, and Johnston, 2008), has been found to benefit customer, employees, and business processes (Johnston and Michel, 2008). The service recovery model proposed in this study provides a roadmap for companies to follow, suggesting several practices for both domestic and international business. In addition, this study providing topics for future research offers an improved understanding of service recovery across countries.

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Appendix 2-1: Survey Questions

Table A2-1: Questions in the Proposed Service Recovery Model (Figure 2-2)

Question Number	Question	Abbreviation
Check Consistent		
1	After the service failure and the company tried to recover from their failure, were you satisfied or not satisfied with their service recovery process?	--
27	The company solved the problem to your satisfaction.	--
Severity Dimensions		
35	After the solution process, the service failure actually cost me much money.	Cost
37	After the solution process, the service failure actually caused me much lost time.	Time-Consuming
39	After the solution process, the service failure actually caused me much inconvenience.	Inconvenience
Interactional Justice (IJ)		
55	The company was open and honest with me during the solution process.	Honest
56	I was treated with dignity and respect during the solution process.	Dignity
57	The decisions made during the solution process were adequately explained.	Adequate
Procedural Justice (PJ)		
46	Resolving service failures appears to be the company's standard procedure.	Standard
48	The time to resolve the service failure was appropriate.	Proper Time
51	The procedures used in response to the service failure were fair.	Fair Procedure
Distributive Justice (DJ)		
53	The outcomes of the solution process were fair.	Fair Outcome
54	The outcomes of the solution process were appropriate.	Proper Outcome
Recovery Outcomes		
31	How likely are you to do business with the company again after the failure?	Repurchase Behavior
42	Without considering the outcome, how satisfied were you with the solution PROCESS?	Process Satisfaction
43	How satisfied were you with the OUTCOME of the solution process?	Outcome Satisfaction
44	After the service failure and the solution process you would call yourself a loyal customer.	Loyalty

Except the following questions, the scales for all items are Strongly Agree; Agree; Neutral; Disagree; Strongly Disagree
Q1: Satisfied and Not Satisfied
Q31: I already have gone back to the company; Very likely; Somewhat likely; Somewhat unlikely; Very unlikely; I am certain I will never return
Q42 & Q43: Very satisfied; Satisfied; Normal; Dissatisfied; Very dissatisfied

Table A2-2: Questions in the Values Survey Module 2008 (Hofstede, 2008)

Question Number	Question
Power Distance Index (PDI) = 35(m07 – m02) + 25(m23 – m26)	
VSM0802	Have a boss (direct superior) you can respect (Of Utmost Important to Of Very Little or No Importance)
VSM0807	Be consulted by your boss in decisions involving your work (Of Utmost Important to Of Very Little or No Importance)
VSM0823	How often, in your experience, are subordinates afraid to contradict their boss (or students their teacher?) (Never to Always)
VSM0926	An organization structure in which certain subordinates have two bosses should be avoided at all cost (Strongly Agree to Strongly Disagree)
Individualism Index (IDV) = 35(m04 – m01) + 35(m09 – m06)	
VSM0801	Have sufficient time for your personal or home life (Of Utmost Important to Of Very Little or No Importance)
VSM0804	Have security of employment (Of Utmost Important to Of Very Little or No Importance)
VSM0806	Do work that is interesting (Of Utmost Important to Of Very Little or No Importance)
VSM0809	Have a job that is respected by your family and friends (Of Utmost Important to Of Very Little or No Importance)
Masculinity Index (MAS) = 35(m05 – m03) + 35(m08 – m10)	
VSM0803	Get recognition for good performance (Of Utmost Important to Of Very Little or No Importance)
VSM0805	Have pleasant people to work with (Of Utmost Important to Of Very Little or No Importance)
VSM0808	Live in a desirable area (Of Utmost Important to Of Very Little or No Importance)
VSM0810	Have chances for promotion (Of Utmost Important to Of Very Little or No Importance)
Uncertainty Avoidance Index (UAI) = 40(m20 - m16) + 25(m24 – m27)	
VSM0816	How often do you feel nervous or tense? (Always to Never)
VSM0820	All in all, how would you describe your state of health these days? (Very Good to Very Poor)
VSM0824	One can be a good manager without having a precise answer to every question that a subordinate may raise about his or her work (Strongly Agree to Strongly Disagree)
VSM0827	A company's or organization's rules should not be broken – not even when the employee thinks breaking the rule would be in the organization's best interest (Strongly Agree to Strongly Disagree)
Long Term Orientation Index (LTO) = 40(m18 – m15) + 25(m28 – m25)	
VSM0815	If there is something expensive you really want to buy but you do not have enough money, what do you do? (Always Save Before Buying to Always Buy Now, Pay Off Later)
VSM0818	Are you the same person at work (or at school if you're a student) and at home? (Quite the Same to Quite Difference)
VSM0825	Persistent efforts are the surest way to results (Strongly Agree to Strongly Disagree)
VSM0828	We should honor our heroes from the past (Strongly Agree to Strongly Disagree)

Appendix 2-2: Measurement Model Analysis

The measurement items for justice scales are compared to past justice studies. Table A2-3 lists the supporting literature related to individual items, while Table A2-4 and A2-5 provide the q-sorting results from doctoral students and faculty members in a Management department. Items have acceptable p_{sa} (>.70) and c_{sv} (>.41) values are retained for confirmatory factor analysis (Menor and Roth, 2006). The reliability analysis is detailed in Table A2-6. According to Table A2-6, the reliability for both US and Taiwan dataset is good. Three justice constructs are paired to test the discriminant validity. While the correlation between two constructs is freely estimated in the unconstrained model, the correlation is fixed to 1 in the constrained model. The analysis of the discriminant validity is listed in Table A2-7. It shows that the US dataset has good discriminant validity, while the Taiwan dataset do not. However, because the overall measurement model fits (S-Bχ^2 value = 23.8146; d.f. = 17; p-value = .1246; CFI-R = 0.986; RMSEA-R = 0.067) calculated from the Taiwan dataset are good, the current measurement model will be kept to avoid over-specification (Byrne, 2006).

Table A2-3: Justice Measurement Items and Related Studies

Item	Question	Supporting Literature
Interactional Justice (IJ): The fair interactions between employees and customers during service recovery activities.		
Dignity	- *I was treated with dignity and respect during the solution process.*	From Kumar, Scheer, and Steenkamp, 1995 (Bruner, James, and Hensel, 2001) From Blodgett, Hill, and Tax, 1997 (Bruner et al., 2001) (Colquitt, 2001)
Honest	- *The company was open and honest with me during the solution process.*	(Maxham and Netemeyer, 2003) From Tax, Brown, and Chandrashekaran, 1998 (Bruner, Hensel, and James, 2005)
Adequate	- *The decisions made during the solution process were adequately explained.*	From Tax, Brown, and Chandrashekaran, 1998 (Bruner et al., 2005)
Treatment	- *The personal treatment you received during the solution process was fair.*	From Griffith, Harvey, and Lusch, 2006 (Roth, Schroeder, Huang, and Kristal, 2008)
Pleasant	- *The service recovery process was a pleasant experience.*	From Tax, Brown, and Chandrashekaran, 1998 (Bruner et al., 2005)
Procedural Justice (PJ): The justice of the recovery process during service recovery.		
Procedure	- *The procedures used in response to the service failure were fair.*	(Maxham and Netemeyer, 2003) (Schoefer and Diamantopoulos, 2008) From Griffith, Harvey, and Lusch, 2006 (Roth et al., 2008)
Proper Time	- *The time to resolve the service failure was appropriate.*	From Blodgett, Hill, and Tax, 1997 (Bruner et al., 2001) (Maxham and Netemeyer, 2003)
Standard	- *Resolving service failures appears to be the company's standard procedure.*	(Colquitt, 2001)
Time Spent	- *I spent a lot of time during this recovery process.*	From Blodgett, Hill, and Tax, 1997 (Bruner et al., 2001) (Maxham and Netemeyer, 2003)
Distributive Justice (DJ): The justice of the outcomes after recovery process.		
Fair Outcome	- *The outcomes of the solution process were fair.*	(Smith, Bolton, and Wagner, 1999) (Maxham and Netemeyer, 2003) From Tax, Brown, and Chandrashekaran, 1998 (Bruner et al., 2005) (Patterson, Cowley, and Prasongsukarn, 2006) (Schoefer and Diamantopoulos, 2008)
Proper Outcome	- *The outcomes of the solution process were appropriate.*	(Colquitt, 2001) (Schoefer and Diamantopoulos, 2008)

Table A2-4: Comparison of Interrater Reliability

Interjudge combination, $C_{a/b}$ [a]	**Interjudge agreement percentage, *A***	**Cohen's κ**	**Perreault and Leigh's I_r**
$C_{1/2}$	72.7%	.59	.77
$C_{1/3}$	36.4%	.05	.21
$C_{1/4}$	81.8%	.73	.85
--			
$C_{2/3}$	54.6%	.32	.56
--			
$C_{3/4}$	45.5%	.18	.43
--			
$C_{8/9}$	63.6%	.45	.67
$C_{8/10}$	72.7%	.59	.77
$C_{9/10}$	63.6%	.45	.67

[a] Interjudge combination between judge a and b.

Table A2-5: Substantive Validity and Overall Placement Ratio

Justice Scales and Measurement Items	**Proportion of Substantive Validity (p_{sa})**	**Coefficient of Substantive Validity (c_{sv})**	**Placement Ratio**
Interactional Justice (IJ)			77%
- *I was treated with dignity and respect during the solution process.*	**1.00**	**1.00**	
- *The company was open and honest with me during the solution process.*	**.82**	**.64**	
- *The decisions made during the solution process were adequately explained.*	**.82**	**.64**	
- *The personal treatment you received during the solution process was fair.*	.64	.45	
- *The service recovery process was a pleasant experience.*	.55	.36	
Procedural Justice (PJ)			94%
- *The procedures used in response to the service failure were fair.*	**.82**	**.64**	
- *The time to resolve the service failure was appropriate.*	**.82**	**.64**	
- *Resolving service failures appears to be the company's standard procedure.*	**.91**	**.82**	
- *I spent a lot of time during this recovery process.*	.64	.27	
Distributive Justice (DJ)			100%
- *The outcomes of the solution process were fair.*	**1.00**	**1.00**	
- *The outcomes of the solution process were appropriate.*	**1.00**	**1.00**	

Note: Items with acceptable p_{sa} (>.70) and c_{sv} (>.41) are kept for confirmatory factor analysis

Table A2-6: Justice Scales and Measurement Items Reliability (US respondents)

Scales and Associated Indicators	Std. Path Loading	Item Reliability	Variance Extracted[a]	Construct Reliability[b]
Interactional Justice (IJ)			**.83**	**.86**
- *I was treated with dignity and respect during the solution process.*	.92	.84		
- *The company was open and honest with me during the solution process.*	.93	.86		
- *The decisions made during the solution process were adequately explained.*	.90	.81		
Procedural Justice (PJ)			**.61**	**.75**
- *The procedures used in response to the service failure were fair.*	.88	.78		
- *The time to resolve the service failure was appropriate.*	.72	.52		
- *Resolving service failures appears to be the company's standard procedure.*	.73	.53		
Distributive Justice (DJ)			**.92**	**.87**
- *The outcomes of the solution process were fair.*	.96	.91		
- *The outcomes of the solution process were appropriate.*	.96	.93		

All standardized path loadings are significant at $p<.05$

[a]: The recommended value for Variance Extracted is 0.5 or higher (Hair et al., 2006)

[b]: The recommended value for Construct Reliability is 0.7 or higher (Hair et al., 2006)

Table A2-6 (Cont'd): Justice Scales and Measurement Items Reliability (Taiwan respondents)

Scales and Associated Indicators	Std. Path Loading	Item Reliability	Variance Extracted[a]	Construct Reliability[b]
Interactional Justice (IJ)			**.61**	**.74**
- *I was treated with dignity and respect during the solution process.*	.85	.73		
- *The company was open and honest with me during the solution process.*	.78	.60		
- *The decisions made during the solution process were adequately explained.*	.70	.48		
Procedural Justice (PJ)			**.53**	**.70**
- *The procedures used in response to the service failure were fair.*	.92	.85		
- *The time to resolve the service failure was appropriate.*	.57	.32		
- *Resolving service failures appears to be the company's standard procedure.*	.64	.40		
Distributive Justice (DJ)			**.93**	**.88**
- *The outcomes of the solution process were fair.*	.96	.92		
- *The outcomes of the solution process were appropriate.*	.97	.95		

All standardized path loadings are significant at $p<.05$

[a]: The recommended value for Variance Extracted is 0.5 or higher (Hair et al., 2006)

[b]: The recommended value for Construct Reliability is 0.7 or higher (Hair et al., 2006)

Table A2-7: Discriminant Validity Analysis of Justice Measurement Model

	IJ & PJ	*IJ & DJ*	*PJ & DJ*
US Constrained Model			
χ^2 value (ML)	10.905	8.594	10.760
χ^2 value (Robust)	7.989	5.025	7.967
***d.f.* (d_0)**	9	5	5
US Unconstrained Model			
χ^2 value (ML)	6.938	3.890	7.218
χ^2 value (Robust)	4.868	1.991	4.732
***d.f.* (d_1)**	8	4	4
$\Delta\chi^2$ value (ML) [a]	3.967	4.704	3.542
$\Delta\chi^2$ value (Robust Adjusted) [b]	4.494	6.385	5.433
p-value [c]	**.034**	**.012**	**.020**
Taiwan Constrained Model			
χ^2 value (ML)	14.171	6.751	5.681
χ^2 value (Robust)	10.697	5.618	3.414
***d.f.* (d_0)**	9	5	5
Taiwan Unconstrained Model			
χ^2 value (ML)	14.039	6.717	4.893
χ^2 value (Robust)	9.960	5.155	2.646
***d.f.* (d_1)**	8	4	4
$\Delta\chi^2$ value (ML) [a]	.132	.034	.788
$\Delta\chi^2$ value (Robust Adjusted) [b]	.204	.043	.855
p-value [c]	.652	.836	.355

[a]: $\Delta\chi^2$ value (ML) is the difference of the χ^2 value (ML) between constrained and unconstrained model.

[b]: $\Delta\chi^2$ value (Robust Adjusted) is calculated by dividing $\Delta\chi^2$ value (ML) by k (Byrne, 2006, p. 219)

where $k = (d_0k_0 - d_1k_1)/d$
d_0 is the *d.f.* of the constrained model
k_0 is the ratio of χ^2 value (ML) over χ^2 value (Robust) in constrained model
d_1 is the *d.f.* of the unconstrained model
k_1 is the ratio of χ^2 value (ML) over χ^2 value (Robust) in unconstrained model
d is the difference of the *d.f.* between constrained and unconstrained model

[c]: p-value is calculated from $\Delta\chi^2$ value (Robust Adjusted) and $d.f. = d$

Appendix 2-3: Descriptive Statistics and Correlations

Table A2-8: Main Study Variables Correlations and Variance Statistics (US respondents)

Measures	*Mean*	*S.D.*	*Skew-ness*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. Repurch	2.47	1.46	.822	1.00											
2. Process	2.56	1.10	.536	.64	1.00										
3. Outcome	2.35	1.16	.708	.70	.82	1.00									
4. AfLoyal	2.60	1.17	.418	.71	.58	.61	1.00								
5. IJ1: dignity	2.30	1.07	.873	.49	.69	.66	.44	1.00							
6. IJ2: adequate	2.44	1.05	.659	.49	.67	.65	.43	.84	1.00						
7. IJ3: honest	2.38	1.01	.854	.50	.69	.67	.45	.86	.84	1.00					
8. PJ1: fair procedure	2.51	1.02	.643	.52	.71	.70	.47	.73	.71	.73	1.00				
9. PJ2: standard process	2.56	1.06	.639	.44	.60	.59	.39	.61	.60	.61	.64	1.00			
10. PJ3: proper time	2.57	1.17	.560	.43	.59	.58	.39	.60	.59	.61	.64	.53	1.00		
11. DJ1: fair outcome	2.30	1.02	.798	.54	.66	.75	.48	.71	.70	.72	.77	.65	.64	1.00	
12. DJ2: proper outcome	2.30	1.02	.846	.54	.67	.76	.48	.72	.71	.72	.78	.66	.65	.92	1.00
13. AfCost	3.62	1.14	-.568	-.38	-.51	-.52	-.34	-.45	-.44	-.45	-.56	-.47	-.46	-.58	-.59
14. AfTime	2.71	1.10	.388	-.30	-.45	-.38	-.27	-.40	-.40	-.41	-.44	-.37	-.37	-.36	-.36
15. AfConve	2.74	1.14	.455	-.30	-.45	-.39	-.28	-.39	-.39	-.40	-.45	-.38	-.38	-.39	-.39
16. F1 (IJ)	--	--	--	.54	.74	.71	.48	.93	.91	.93	.79	.66	.65	.77	.78
17. F2 (PJ)	--	--	--	.60	.81	.80	.53	.83	.82	.84	.88	.73	.73	.88	.89
18. F3 (DJ)	--	--	--	.56	.70	.79	.50	.74	.73	.75	.81	.68	.67	.96	.97
19. Gender	1.67	.47	-.749	-.05	.03	.01	-.06	.00	.00	.00	.00	.00	.00	.00	.00
20. Age	5.09	1.14	.592	.04	.00	-.03	.02	.00	.00	.00	.00	.00	.00	.00	.00
21. Education	6.46	1.20	-.010	.06	-.06	-.02	.05	.00	.00	.00	.00	.00	.00	.00	.00
22. Work	3.16	1.62	.509	-.07	.00	.03	.03	.00	.00	.00	.00	.00	.00	.00	.00
23. Campus Live	3.25	1.23	-1.306	.03	-.05	.05	.03	.00	.00	.00	.00	.00	.00	.00	.00
24. Status	1.28	.45	.984	.05	.01	-.03	.04	.00	.00	.00	.00	.00	.00	.00	.00

Table A2-8 (Cont'd): Main Study Variables Correlations and Variance Statistics (US respondents)

Measures	*Mean*	*S.D.*	*Skew-ness*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*
13. AfCost	3.62	1.14	-.568	1.00											
14. AfTime	2.71	1.10	.388	.48	1.00										
15. AfConve	2.74	1.14	.455	.51	.64	1.00									
16. F1 (IJ)	--	--	--	-.49	-.44	-.43	1.00								
17. F2 (PJ)	--	--	--	-.64	-.51	-.52	.90	1.00							
18. F3 (DJ)	--	--	--	-.61	-.38	-.40	.80	.92	1.00						
19. Gender	1.67	.47	-.749	.00	.00	.00	.00	.00	.00	1.00					
20. Age	5.09	1.14	.592	.00	.00	.00	.00	.00	.00	.00	1.00				
21. Education	6.46	1.20	-.010	.00	.00	.00	.00	.00	.00	.00	.39	1.00			
22. Work	3.16	1.62	.509	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00		
23. Campus Live	3.25	1.23	-1.306	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00	
24. Status	1.28	.45	.984	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00

Table A2-9: Main Study Variables Correlations and Variance Statistics (Taiwan respondents)

Measures	*Mean*	*S.D.*	*Skew-ness*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*
1. Repurch	2.99	1.66	.45	1.00											
2. Process	3.23	1.12	.01	.70	1.00										
3. Outcome	3.24	1.09	-.03	.70	.84	1.00									
4. AfLoyal	2.90	1.23	.38	.63	.63	.67	1.00								
5. IJ1: dignity	2.84	1.19	.48	.53	.71	.66	.46	1.00							
6. IJ2: adequate	3.19	1.15	.10	.44	.59	.54	.38	.60	1.00						
7. IJ3: honest	2.73	1.12	.43	.48	.64	.59	.42	.66	.54	1.00					
8. PJ1: fair procedure	3.04	1.14	.28	.59	.80	.73	.52	.76	.62	.68	1.00				
9. PJ2: standard process	2.80	1.11	.41	.41	.55	.50	.36	.52	.43	.47	.58	1.00			
1. PJ3: proper time	2.94	.98	.28	.40	.54	.49	.35	.51	.42	.46	.57	.39	1.00		
11. DJ1: fair outcome	2.95	1.20	.31	.59	.78	.74	.52	.76	.62	.68	.83	.57	.56	1.00	
12. DJ2: proper outcome	3.05	1.26	.17	.61	.80	.76	.53	.78	.64	.70	.85	.59	.57	.93	1.00
13. AfCost	2.96	1.13	-.08	-.32	-.43	-.38	-.27	-.37	-.31	-.34	-.46	-.32	-.31	-.37	-.38
14. AfTime	1.99	.80	.31	-.06	-.08	-.07	-.05	-.05	-.04	-.05	-.08	-.06	-.06	-.05	-.05
15. AfConve	2.10	.91	.70	-.23	-.31	-.28	-.20	-.33	-.27	-.30	-.33	-.22	-.22	-.31	-.32
16. F1 (IJ)	--	--	--	.63	.84	.77	.54	.85	.70	.77	.89	.61	.60	.88	.91
17. F2 (PJ)	--	--	--	.65	.87	.80	.56	.82	.68	.74	.92	.63	.62	.90	.92
18. F3 (DJ)	--	--	--	.62	.82	.78	.54	.79	.65	.71	.87	.60	.59	.95	.98
19. Gender	1.57	.50	-.27	.05	.03	.11	.18	.00	.00	.00	.00	.00	.00	.00	.00
2. Age	5.30	1.74	.31	.06	.12	.02	.11	.00	.00	.00	.00	.00	.00	.00	.00
21. Education	5.76	2.06	-.29	-.07	.07	.05	.08	.00	.00	.00	.00	.00	.00	.00	.00
22. Work	2.42	1.48	.97	.07	-.07	.14	.09	.00	.00	.00	.00	.00	.00	.00	.00
23. Campus Live	2.54	1.15	-.30	.06	-.06	-.05	-.21	.00	.00	.00	.00	.00	.00	.00	.00
24. Status	1.65	.50	-.34	.01	.11	.09	.06	.00	.00	.00	.00	.00	.00	.00	.00

Table A2-9 (Cont'd): Main Study Variables Correlations and Variance Statistics (Taiwan respondents)

Measures	*Mean*	*S.D.*	*Skew-ness*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*
13. AfCost	2.96	1.13	-.08	1.00											
14. AfTime	1.99	.80	.31	.30	1.00										
15. AfConve	2.10	.91	.70	.18	.57	1.00									
16. F1 (IJ)	--	--	--	-.44	-.06	-.38	1.00								
17. F2 (PJ)	--	--	--	-.50	-.09	-.36	.96	1.00							
18. F3 (DJ)	--	--	--	-.39	-.06	-.33	.93	.95	1.00						
19. Gender	1.57	.50	-.27	.00	.00	.00	.00	.00	.00	1.00					
2. Age	5.30	1.74	.31	.00	.00	.00	.00	.00	.00	.00	1.00				
21. Education	5.76	2.06	-.29	.00	.00	.00	.00	.00	.00	.00	.66	1.00			
22. Work	2.42	1.48	.97	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00		
23. Campus Live	2.54	1.15	-.30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00	
24. Status	1.65	.50	-.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.00

Appendix 2-4: Competing Models

Two competing models are illustrated here. Competing Model 1, as illustrated in Figure A2-1 and A2-2 for the US and Taiwan dataset respectively, the direct paths from interactional justice to process and outcome satisfaction are added to the base model (Figure 2). The p-values for the χ^2 difference are not significant, suggesting the overall performance of Competing Model 1 and base model is similar. Because of parsimony, the base model is better than Competing Model 1. Competing Model 2, as illustrated in Figure A2-3 and A2-4 for the US and Taiwan dataset respectively, the direct paths from procedural justice to outcome satisfaction as well as from distributive justice to process satisfaction are added to the base model. The p-values for the χ^2 difference, again, are not significant, indicating that the performance between Competing Model 2 and the base model is the same. Because of parsimony, the base model is preferred.

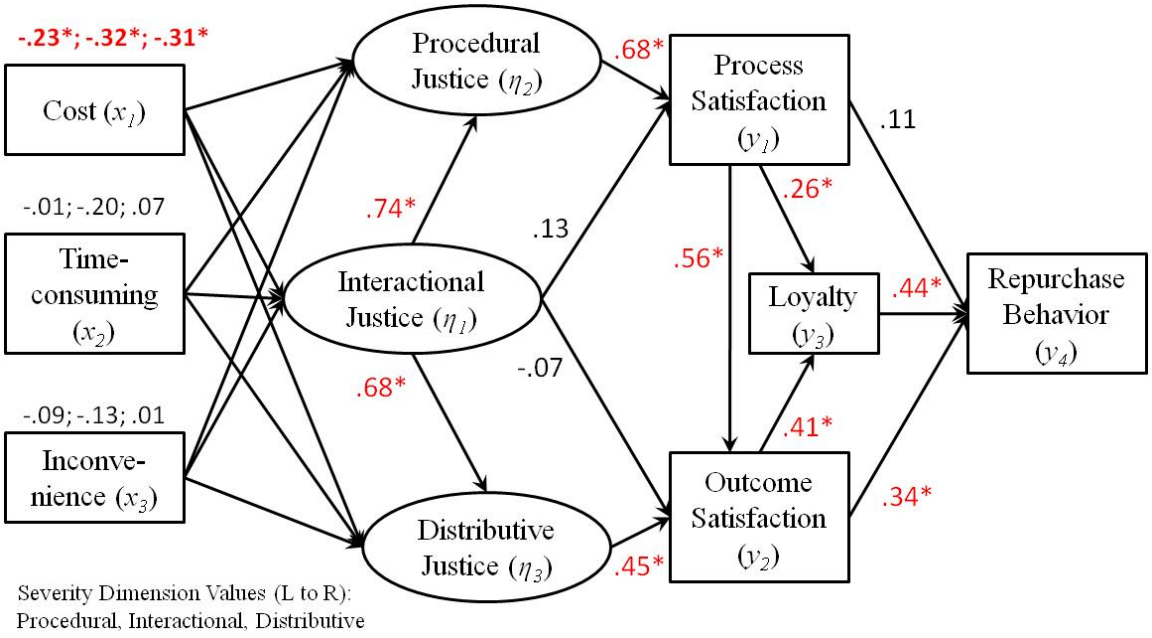

Figure A2-1: The Competing Model 1—**US** (S-Bχ^2 value = 202.4743; d.f. = 152; p-value = .0039; CFI-R = 0.970; RMSEA-R = 0.047; * p < 0.05)

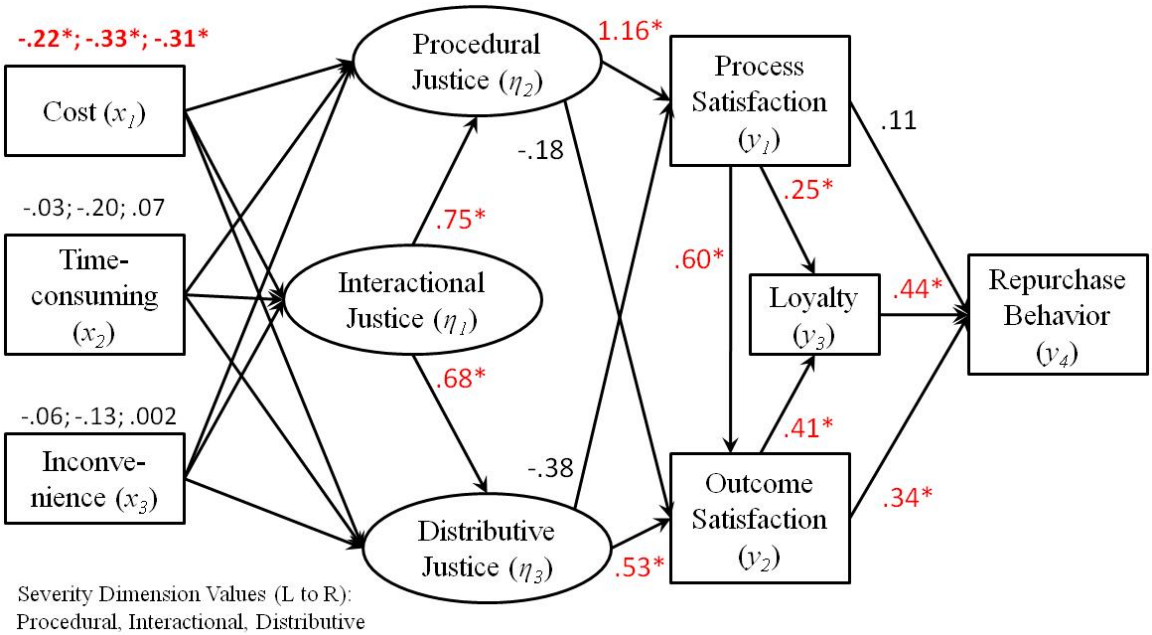

Figure A2-2: The Competing Model 2—**US** (S-Bχ^2 value = 198.9545; d.f. = 152; p-value = .0063; CFI-R = 0.972; RMSEA-R = 0.045; * p < 0.05)

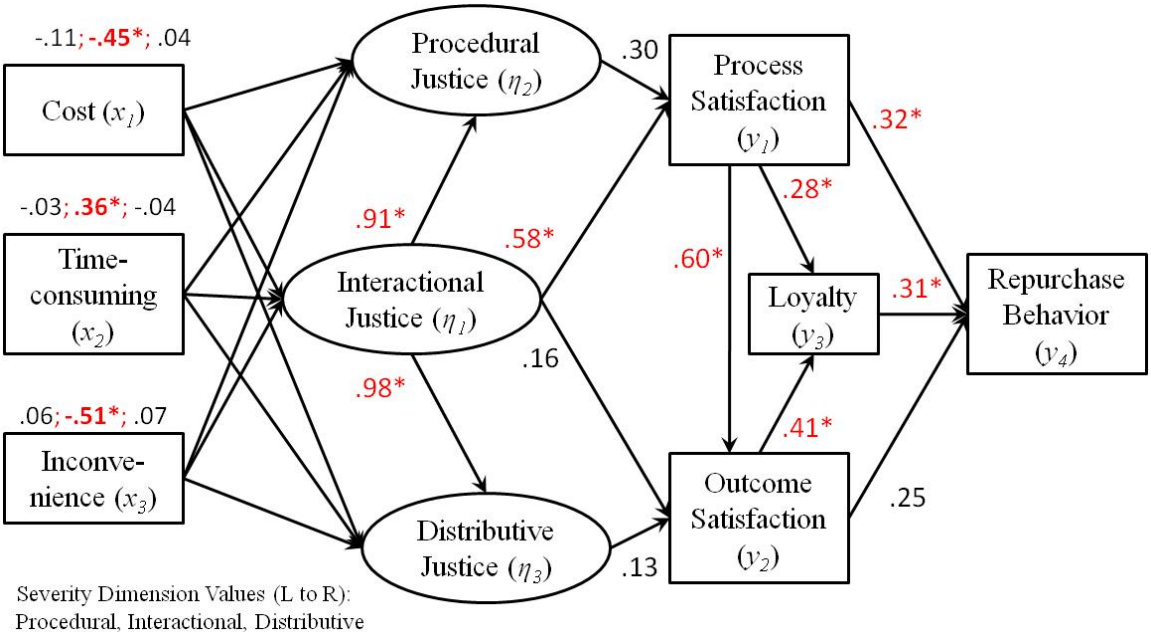

Figure A2-3: The Competing Model 1—**Taiwan** (S-Bχ^2 value = 186.8287; d.f. = 152; p-value = .0287; CFI-R = 0.961; RMSEA-R = 0.053; * p < 0.05)

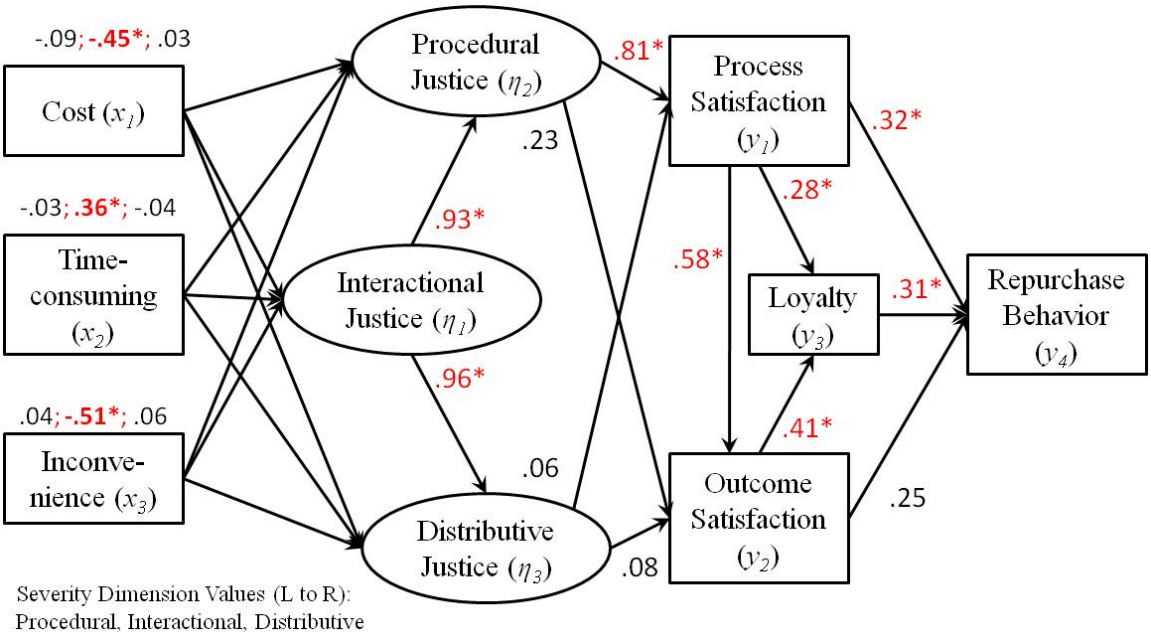

Figure A2-4: The Competing Model 2—**Taiwan** (S-Bχ^2 value = 198.9545; d.f. = 152; p-value = .0063; CFI-R = 0.972; RMSEA-R = 0.045; * p < 0.05)

Appendix 2-5: Common Method Variance Analysis

Figure A2-5 illustrates the proposed path model with common method factor. As illustrated in the figure, the common method factor leads to all justice measurement items (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003). The dashed lines indicate the similar structural paths shown in Figure 2. The 3 dashed lines from severity dimensions indicate that cost, time-consuming, and inconvenience lead to all three justice measures. The 2 dashed lines to recovery outcomes indicate that procedural justice leads to process satisfaction, while distributive justice leads to outcome satisfaction. Table A2-10 lists the standardized loadings to both the theoretical factors (*i.e.,* justice) and the common method factor. All loadings to the theoretical factors are significant and larger than the loadings to the common method factor. In addition, all loadings to the common method factor are not significant.

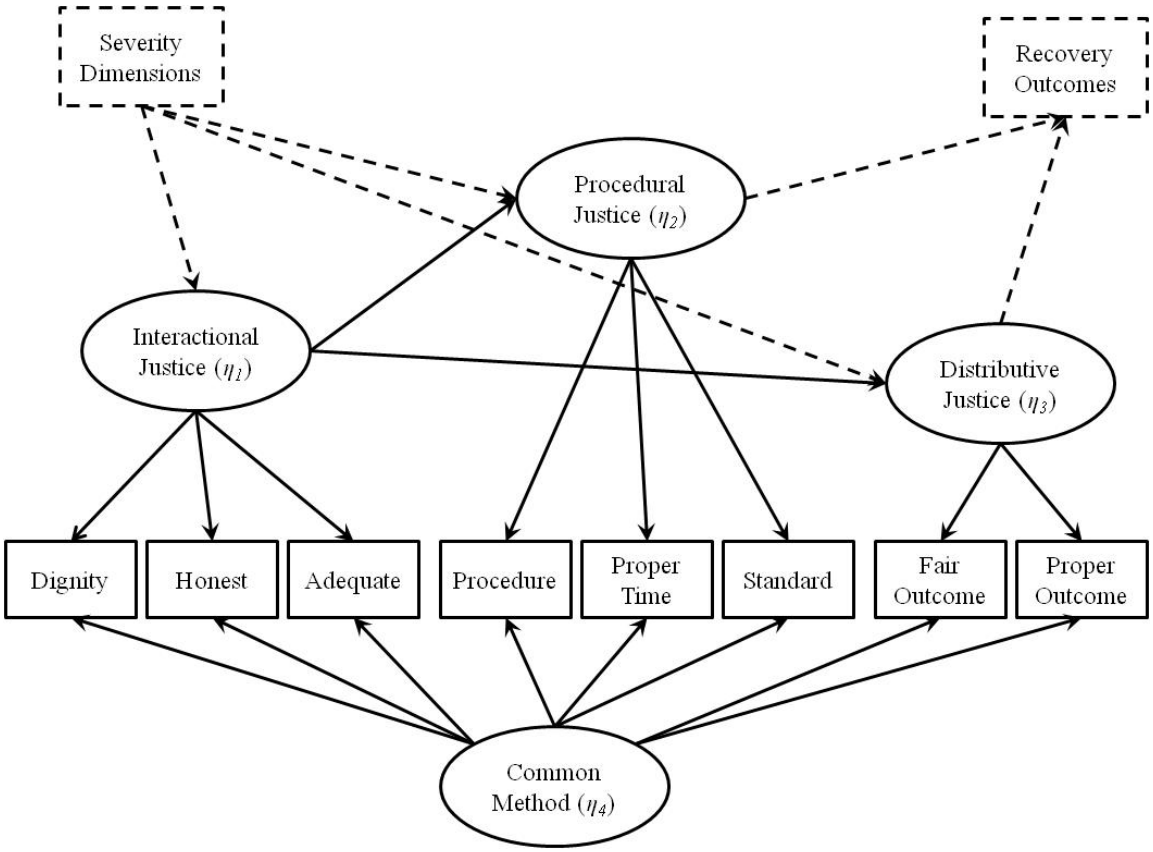

Figure A2-5: The Proposed Path Model with Common Method Factor

Table A2-10: Standardized Loadings in the Path Model with Common Method Factor

	US Respondents		Taiwan Respondents	
	Theoretical Factors	**Common Method Factor**	**Theoretical Factors**	**Common Method Factor**
Interactional Justice (IJ)	(.844)	(.004)	(.587)	(.070)
- *I was treated with dignity and respect during the solution process.*	.930	.070	.840	.160
- *The company was open and honest with me during the solution process.*	.929	-.049	.760	-.025
- *The decisions made during the solution process were adequately explained.*	.897	-.058	.692	.428
Procedural Justice (PJ)	(.620)	(.055)	(.543)	(.066)
- *The procedures used in response to the service failure were fair.*	.871	-.086	.917	-.051
- *The time to resolve the service failure was appropriate.*	.725	-.295	.641	.442
- *Resolving service failures appears to be the company's standard procedure.*	.758	.266	.613	.009
Distributive Justice (DJ)	(.923)	(.002)	(.901)	(.035)
- *The outcomes of the solution process were fair.*	.957	-.062	.941	-.226
- *The outcomes of the solution process were appropriate.*	.964	-.000	.957	-.139

Note: All loadings for the theoretical factors are significant at $\alpha = 0.01$ and larger than the loadings (absolute values) for common method factor. All loadings for common method factor are not significant. Value in parentheses is the average variance extracted (AVE).

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Methodology Note

Essay 3: Experimental Comparisons of 1- and 2-incident CIT processes

Abstract:

This methodology note investigates the differences between 1- and 2-incident processes in Critical Incident Technique (CIT) combination studies, *i.e.*, those involving both CIT and survey methods. Collecting data from more than 100 college students, this study compares the response rate and item completion rate from the two processes, determining that the two rates are similar. In addition, it also conducts mean difference tests, finding that respondents in 2-incident processes tend to answer toward the negative side—more serious, less satisfaction, loyalty, and justice—under conditions involving few variables. In practice, researchers can employ this 2-incident process to gain an increased number of incidents for analysis, since the response rate and item completion rate is not much different from the 1-incident process.

1. Introduction

This research note investigates the survey results collected from both the 1- and 2-incident Critical Incident Technique (CIT). As a qualitative method, CIT asks respondents to identify 1 or more incidents during the data collection process. While 2-incident processes, which usually collect data on two opposing incidents, provide more statistical power for comparing them, 1-incident processes can save time for the respondents, thereby increasing the response rate and the number of complete responses. Comparing the results from these two processes can help researchers to determine the accurate number of incidents for different situations.

The Critical Incident Technique (CIT), first used in academic research approximately a half century ago (Flanagan, 1954), is categorized as a qualitative method; however, it can be combined with other methodologies. Surveying more than 10 journals and proceedings, Gremler (2004) categorized these studies into three groups: combination studies, interpretive studies, and content analysis studies. This current study focuses on the combination studies employing both CIT and survey. For example, researchers can ask respondents to identify a critical, recent incident and then to answer a series of questions related to it. After this collection process, the researchers use quantitative tools to analyze the results from these questions instead of incident descriptions.

In this study, several features of survey research are examined. First, response rate, as a primary feature of a good survey study, is investigated. Because of the pervasive distributions of surveys, respondents are less willing to answer them. Thus, researchers

suggest reducing the "cost" of answering a survey, by, for example, decreasing its length of questionnaires and making it easy to understand (Dillman, 2007). Second, completion rate is important for increasing the effective response rate because incomplete responses are difficult to analyze. Handling missing data is possible in most statistics software (Allison, 2003); however, the assumptions required for imputation, missing at random, are not always met in any dataset. Thus, increasing the number of completion responses is important to avoid the complication of missing data. Third, pooling data is also a popular strategy in survey research (Rungtusanatham, Ng, Zhao, and Lee, 2008). Because of the difficulties of collecting survey data in recent years (Dillman, 2007), these might not be collected from the same situation; thus, pooling data from different situations can significantly increase the sample size, thereby raising the statistical power. A similar situation occurs with a CIT survey. Collecting 2 or more incidents from respondents, easy in the past, is more difficult now. Currently, researchers may be able to collect only one incident. If there is a need to compare the results from past 2-incident processes and from current 1-incident processes, it is necessary to ensure that these two processes are similar to suggest that they are comparable.

Using the CIT survey questions from Miller, Craighead, and Karwan (2000), this study collects data from more than 100 respondents asked to describe one or two recent service recovery incidents and to answer questions related to them. Response rates, completion rates, and mean differences between variables are used to investigate the results obtained from 1- and 2-incident processes. After these analyses, this study provides evidence that the response rates and item completion rates are similar; however,

some variables collected from the two processes have significant mean differences. Thus, while researchers can select the number of incidents according to their empirical design, they need to further investigate the datasets from these two processes before compare or pool the datasets.

The following section briefly discusses CIT, response rates, completion rates, and mean differences. Next, the research design and sample are described, and the results and the discussions are given. Conclusions for practice will be provided at the end of this paper.

2. The Combination Study of the CIT Method

2.1 Critical Incident Technique (CIT)

Introduced approximately 50 years ago, CIT is categorized as a qualitative methodology. Its primary advantage is the rich data collected from respondents' perspectives. As a result, most research using CIT focuses on the service context, because this method is good at collecting intangible data from customer's point of view (Gremler, 2004). In addition, CIT is also a useful tool for collecting the customer perceptions from different cultures (Stauss and Mang, 1999). Although most studies (Bitner, Booms, and Tetreault, 1990; Meuter, Ostrom, Roundtree, and Bitner, 2000) have used CIT as a single methodology, this study applies CIT as a combination method (Gremler, 2004) to better evaluation the factors of our interests. While the survey asks the respondents to illustrate one or two service recovery incidents, the primary analysis comes from the multiple choice questions related to these events.

The procedures involved with CIT are discussed in several articles and books (Chell, 2004; Gremler, 2004). Basically it can be separated into 5 phases. First, the researchers define their research questions, then, they design their data collection process, including specifying the critical incident in the study and the unit of analysis. They also focus on data collection instruments, appropriate samples, and the number of incidents in this phase. Next, they conduct both the data collection and data analysis phases. During these two, the researchers follow the data collection process designed. In addition, they are careful in their consideration of the reliability and validity issues (Chell, 2004; Ronan and Latham, 1974), while interpreting the results.

The last phase reports the results. While good articles providing models for reporting results can be found in Gremler's article (2004), the data analysis phase in this study is similar to that for survey research since the primary focus here is on the answers of the multiple choice questions related to the incidents. Interpretation and coding of the incident descriptions are not discussed in this study as the effectiveness and analysis of the results reported here need to follow the criteria for survey research.

2.2 Response Rate, Item Completion Rate, and Mean Differences

Unlike CIT, survey methodology is categorized as a quantitative methodology and response rates and item completion rates are important measures for survey effectiveness (Bartlett, 2005; Klassen and Jacobs, 2001; Malhotra and Grover, 1998). Dividing the collected responses by the number of potential respondents is defined as the response rate. Researchers have suggested a reasonable rate of 20% for survey research in

production and operations management (Malhotra and Grover, 1998). In various studies, potential respondents can be expressed in several ways, including those approached, the number of deliverable surveys, or those expressing an interest in the survey (Klassen and Jacobs, 2001). In this study, this denominator, potential respondents, can be represented in two ways, as respondents or incidents. While for 1-incident process, the number of respondents is the same as for the incidents, the 2-incident process assumes 2 incidents from each respondent. However, respondents might be less willing to participate in this process because it requires a longer response time than for a 1-incident one.

Dividing the answered items by the total number of items for each respondent is the item completion rate, important because a high item completion rate indicates few missing data points. Also, the higher the item completion rate the higher the effective response rate. Although most statistics programs now provide various methods for handling missing data (Allison, 2003), completed responses are still more accurate than dealing with missing data. In this study, the item completion rate is anticipated to be higher in the 1-incident process than in the 2-incident one. While respondents are patient in answering every question about the first incident, they may not be quite so patient answering the same questions the second time.

The mean differences of the variables in these two processes are analyzed to test whether these two samples have similar results on means. Insignificant mean differences, which suggest the average performance of these processes is similar, provides basic information about the two processes, but does not suggest any causal relationships among

variables. On the other hand, significant differences suggest a relationship among specific variables needing further research.

3. Research Methods

3.1 Research Design and Sample

College students in a southeastern US university were recruited to participate in this study. Since the respondents for CIT do not need any special qualifications, students are good candidates for participation. In addition, questions in this CIT survey were related to service recovery. Since students are customers, they could answer these questions easily. The students in five sections of one required management course served as the target respondents. Students in two sections having the same instructor were randomly picked to participate in the 2-incident process, while students in the other 3 sections participated in the 1-incident one. All students were provided similar incentives and asked to complete and return the survey in one week. Table 3-1 lists the demographic information of students participating in this study. While categories like age and work experience were similar between the two groups, the others were different. However, research has found that these demographics do not influence the causal relationships in service recovery incidents (Weng and Miller, 2009; Weng, Roth, and Miller, 2009).

Table 3-1: Demographic Information from Respondents

	1-Incident (75 Responses)	**2-Incident (50 Responses)**
Female	31.3%*	18.6%
Male	68.7%	81.4%
Age under 20	7.8%	2.3%
Age 20 and above	92.2%	97.7%
Education under 14 years	4.7%	16.3%**
Education 14 years and above	95.3%	83.7%
No job experience	12.5%	7.1%
With some job experiences	87.5%	92.9%
Live on-campus	12.5%*	4.7%
Live off-campus	87.5%	95.3%
In-state students	71.4%	76.7%
Out-of-state students	28.6%	23.3%

Note: * number is greater than the other group at $p < .1$
** number is greater than the other group at $p < .05$

Questions for the 1- and 2-incident processes were the same. While the 1-incident process asked the students to provide one service recovery incident, either successful or unsuccessful, the 2-incident process asked for two service recovery incidents, one successful and one unsuccessful. The results for each incident from both processes was checked for consistency by comparing Q1 and Q27 (see the appendix for the questions in the survey). After this consistency check, the 1-incident process results in 64 usable incidents with 50 successful and 14 unsuccessful ones, while the 2-incident process provides 81 usable incidents with 46 successful and 35 unsuccessful ones.

3.2 Statistical Methods and Service Recovery Model

Three primary statistical methods were used in this study, the z-test of proportion difference, the t-test for two sample means, and the analysis of covariance. The z-test of proportion difference is conducted to test the response rates, investigating the differences between two proportions (Hicks and Turner Jr., 1999, p. 43). The related formula was set up in an Excel worksheet to facilitate the calculation of the z scores and the p-values.

To test the difference in the item completion rates, the rate for each case in the two processes is calculated, and the t-test of sample mean is then performed to determine the mean for the item completion rates from the 1- and 2-incident processes. Analysis of this mean difference is a two-step process. First, the F-Test for Two Sample Variances in Excel's Data Analysis function is used to compare the variances in the completion rates for the two processes. Next, the t-Test Two-Sample Assuming Equal or Unequal Variances, also found in Excel's Data Analysis, is conducted to test the means of the completion rates based on the F-test results.

Mean differences are tested using two methods. The first one is to conduct the t-test of the sample mean, which is described in the previous paragraph, and the other one is to use the Analysis of Covariance (ANCOVA). Because the demographics vary between the two processes, these variables should be considered during the process of testing the mean differences. The GLM function in SPSS Statistics GradPack 17.0 is used to conduct this analysis. While individual variables of interest serve as dependent variables, process type and demographic variables represent fix factor and covariates respectively in the program.

4. Results and Discussions

4.1 Demographics

Demographic variables, including gender, age, education years, work experiences, campus living location, and student status, were collected in this study. The z-test of proportion difference was used to analyze whether these variables had similar proportions in both the 1- and 2-incident processes. Table 3-1 shows the significance of each variable. For example, the asterisk next to 31.3% in the Female row indicates that 31.3% is significantly larger than 18.6% at $\alpha = 0.1$. The two asterisks next to 16.3% in the Education under 14 years row indicate that 16.3% is significantly larger than 4.7% at $\alpha = 0.05$. The three demographic variables having p-values smaller than .1 are significantly different between the two processes. All these demographic variables serve as covariates when testing the mean differences.

4.2 Response Rate and Item Completion Rate

The results of comparing response rates from the 1- and 2-incident processes are listed in Table 3-2. Three different rates were calculated in this study, because it involves both respondents and incidents. The number of responses was divided by the total number of possible respondents in the course sections to obtain the first response rate, 68.2% and 75.8% for the 1- and 2-incident processes respectively. The z-test of proportion with a p-value equaling 0.142 does not show significant differences between these two rates, suggesting that respondents participated in the survey at the beginning of these two processes.

Table 3-2: Response Rate

	1-Incident Process	2-Incident Process	p-Value
Target pool (in respondent)	110	66	
Number of respondents	75	50	
Response rate [a]	68.2%	75.8%	.14
Target pool (in incident)	110	132	
Number of effective incidents	62	81	
Effective incident rate [b]	56.4%	61.4%	.22
Possible number of incidents [c]	75	100	
Number of effective incidents	62	81	
Effective incident rate [d]	82.7%	81.0%	.39

[a]: The test of proportion difference of the rates between the 1- and 2-incident are not significant for all three rates.
[b]: This rate is the number of effective incidents divided by the target pool (in incident)
[c]: The values are calculated by multiplying the number of responses by the possible number of incidents for each response. For example, 50 responses multiplied by 2 possible incidents for each response equals 100 possible incidents.
[d]: This rate is the number of effective incidents divided by the possible number of incidents, which is calculated from the number of responses.

Since the incident was the unit of analysis in this study, the other two response rates related to the incidents indicate no significant differences between the two processes. The first response rate of the two was calculated by dividing the number of usable incidents by the total number of possible incidents from all respondents in the course sections. Here, the usable incidents were screened by comparing the answers for Q1 and Q27 as described in the Research Design Section. The z-test indicates that 58.2% and 61.4% are not significantly different from each other. The last response rate, the second rate related to the incidents, were calculated by dividing the number of collected incidents by the total number of possible incidents from the responses collected. This rate was calculated because it can show whether respondents in the 2-incident process stop

participating after answering the first incident. Although the rate of the 2-incident process is smaller than that of the 1-incident process, this difference is not significant. These analyses indicate that the response rates, based on both respondents and incidents, are not significantly different between the 1- and 2-incident processes.

Two item completion rates were calculated, including the rates for both multiple choice and open-ended questions. The results of these two rates are listed in Table 3-3. The item completion rates for the types of questions were calculated separately because multiple choice questions are less time-consuming than open-ended ones (Dillman, 2007). Table 3-3 indicates that the item completion rates are lower for the open-ended question, but the rates between the 1- and 2-incident processes are not significantly different from each other, suggesting the item completion rate is not influenced by these two incident collection processes.

Table 3-3: Item Completion Rate

Average Completion Rate	**1-Incident Process**	**2-Incident Process**
Multiple choice questions	99.8%	98.7%
Two-tail p-value		.15
Open-ended questions	86.3%	85.2%
Two-tail p-value		.76

The similar performance of the 1- and 2-incident processes in the response rate and the item completion rate is not expected. Incentives, provided to students in this study, may increase the rates of the 2-incident processes. In addition, students need to provide personal information at the end of the survey to obtain the incentives, preventing them from quitting the survey early. It is important for researchers to provide incentives in their study to reach similar rates in both 1- and 2-incident processes.

4.3 Mean Differences

Mean differences were analyzed for two situations, successful and unsuccessful incidents. Researchers have found that justice perceptions and satisfaction are influenced by recovery practices (Liao, 2007; Patterson, Cowley, and Prasongsukarn, 2006; Weng *et al.*, 2009), which can cause successful or unsuccessful recovery results. Because the 2-incident process has a higher percentage of unsuccessful incidents, the average of the variables such as satisfaction and loyalty should be larger (*i.e.*, more negative) than 1-incident process, suggesting invalid comparisons. Therefore, the mean difference is tested individually for the successful and unsuccessful results.

Table 3-4 lists the means, the standard deviations (S.D.), and the skewness of the primary variables in the survey questions for the two processes. According to this table, all variables have acceptable skewness values, between -3 and 3, indicating that each exhibits good symmetry. This feature is important because it suggests normality, which is the assumption for conducting ANCOVA. As illustrated in the Research Method Section, the t-test of mean difference is conducted based on the results of the variance F-test. The last two columns in the table show these F and t values, the asterisks indicating the significance; as these data show, five variables have t values significant at $\alpha = 0.05$. Two variables, repurchase and outcome satisfaction, in recovery outcomes have significantly negative mean differences, while two in after-recovery severity, seriousness and cost, have significantly positive mean differences. These four significant values indicate the same situation—respondents in the 2-incident process tend to think the problems are more serious, thereby exhibiting less satisfaction than those in the 1-incident process. The

last variable with a significant mean difference is the customer perception of the time spent during the recovery process. The positive t value of this variable indicates that respondents in the 2-incident process, on average, think they spent less time during the successful recovery than those in the 1-incident process.

Table 3-4: The Descriptive Statistics and Mean Comparisons in Successful Incidents

Variable Group	Variable Abbreviation	Question Number	1-Incident			2-Incident			Variance	Mean
			Mean	S. D.	Skewness	Mean	S. D.	Skewness	F value	t value
Recovery outcome	Repurchase	31	1.76	.925	1.177	2.35	1.251	1.288	1.672	-2.637*
	Process	42	2.08	.731	.205	2.27	.809	.813	.817	-1.165
	Outcome	43	1.73	.605	.185	2.20	.944	1.276	1.926	-2.869**
	AfLoyalty	44	2.18	.928	.758	2.47	1.079	.431	2.536	-1.367
Before-recovery severity	BeSerious	10	2.96	1.207	-.290	2.65	1.100	.118	.082	1.293
	BeCost	11	2.78	1.246	.109	2.59	1.292	.316	.392	.724
	BeTime	12	2.67	1.179	.359	2.64	1.004	.219	.671	.128
	BeConven	13	1.78	.848	.883	2.13	1.036	.621	1.017	-1.839
After-recovery severity	AfSerious	34	3.43	.957	-.530	2.96	.928	-.444	.664	2.428*
	AfCost	35	4.06	.876	-1.286	3.60	1.195	-.666	9.241**	2.119*
	AfTime	37	3.12	.949	.508	2.84	.914	.329	.075	1.453
	AfConven	39	2.98	1.041	.515	2.60	.963	.582	.007	1.820
Before-failure loyalty	BeTimes	3	3.43	1.768	.135	3.89	1.900	-.244	.950	-1.230
	BeLength	4	3.73	1.524	-.854	3.70	1.428	-.917	.669	.129
	BeLoyal	5	2.20	1.118	.978	2.22	.927	.787	1.204	-.085
	BeQuality	6	1.84	.688	.222	2.02	.802	1.309	.471	-1.209
Time issue	FindLength	15	2.90	1.046	-.245	2.84	1.043	-.052	.173	.248
	StartLength	19	2.33	1.162	.483	2.63	1.306	.672	1.025	-1.200
	EndLength	24	3.22	1.229	.323	3.11	1.337	.551	.646	.440
Interactional justice	Honest	55	1.98	.729	1.407	2.20	.894	.782	4.781*	-1.300
	Dignity	56	1.82	.755	1.534	2.05	.714	.335	.242	-1.500
	Adequate	57	2.02	.803	1.219	2.31	.793	.804	1.440	-1.764
	Treatment	52	1.98	.777	1.425	2.22	.795	.426	2.256	-1.496
	Pleasant	50	2.53	.844	.008	2.73	.924	.214	.010	-1.073
Procedural justice	Procedure	51	2.14	.816	1.642	2.20	.823	.904	.572	-.362
	Standard	46	2.12	.726	.832	2.44	.943	1.019	5.678*	-1.844
	ProperTime	48	2.18	.834	.987	2.47	.944	.949	1.940	-1.543
	TimeSpent	49	3.37	.929	.162	2.89	.859	-.230	1.068	2.587*
Distributive justice	FairOutcome	53	1.90	.743	1.439	2.18	.947	.824	3.654	-1.617
	ProperOut	54	1.88	.754	1.426	2.20	.944	.767	3.345	-1.837

Note: * p<.05; ** p<0.01

Table 3-5: The Descriptive Statistics and Mean Comparisons in Unsuccessful Incidents

Variable Group	Variable Abbreviation	Question Number	1-Incident			2-Incident			Variance F value	Mean t value
			Mean	S. D.	Skewness	Mean	S. D.	Skewness		
Recovery outcome	Repurchase	31	4.46	1.613	-1.044	4.46	1.597	-.814	.037	.008
	Process	42	3.77	1.013	-.599	4.06	.802	-.469	1.108	-1.028
	Outcome	43	4.00	.707	.000	4.12	.977	-1.282	1.770	-.395
	AfLoyalty	44	3.77	1.092	-.373	3.63	1.114	-.276	.090	.391
Before-recovery severity	BeSerious	10	2.23	1.166	.221	2.51	1.222	.324	.018	-.723
	BeCost	11	2.31	1.032	.344	2.18	.968	.476	.152	.408
	BeTime	12	2.50	1.314	.577	2.51	1.095	.104	.629	-.037
	BeConven	13	1.62	.961	1.613	2.11	.796	.530	1.112	-1.824
After-recovery severity	AfSerious	34	2.77	1.092	-.827	2.46	1.120	.313	.495	.863
	AfCost	35	2.46	1.330	.474	2.37	1.114	.682	1.019	.236
	AfTime	37	2.15	.899	.472	2.31	.932	.696	.123	-.535
	AfConven	39	1.62	.506	-.539	2.06	.684	.515	.071	-2.118*
Before-failure loyalty	BeTimes	3	2.69	1.437	.440	3.94	1.552	-.050	.047	-2.529*
	BeLength	4	3.08	1.801	-.236	4.00	1.392	-1.258	3.944	-1.861
	BeLoyal	5	2.54	1.127	.714	2.48	1.004	-.153	.017	.158
	BeQuality	6	2.69	1.316	.413	2.37	.877	.556	7.467**	.815
Time issue	FindLength	15	3.15	1.214	-.342	2.89	1.301	.054	.033	.646
	StartLength	19	3.69	1.601	.163	3.21	1.572	.782	.100	.944
	EndLength	24	3.92	1.801	-.270	3.46	1.559	.455	.001	.882
Interactional justice	Honest	55	3.38	1.193	.148	3.60	.976	-.097	1.467	-.639
	Dignity	56	3.38	1.121	.340	3.46	1.146	-.137	.074	-.196
	Adequate	57	3.54	1.050	.136	3.71	1.060	-.336	.001	-.486
	Treatment	52	3.54	.877	.301	3.57	1.092	-.337	1.193	-.098
	Pleasant	50	4.15	.899	-1.156	4.03	.891	-.853	.039	.432
Procedural justice	Procedure	51	3.46	.967	.127	3.71	.957	-.231	.001	-.811
	Standard	46	3.92	.954	-.507	3.80	1.079	-.619	.655	.362
	ProperTime	48	3.15	1.214	-.012	3.77	.942	-.183	.890	-1.864
	TimeSpent	49	2.31	1.109	.143	3.14	1.004	.253	.836	-2.490*
Distributive justice	FairOutcome	53	3.15	.987	.262	3.83	1.043	-.793	.000	-2.020*
	ProperOut	54	3.38	1.044	.101	3.83	.954	-1.144	1.045	-1.397

Note: * p<.05; ** p<0.01

Table 3-6: Mean Comparisons After Controlling Demographic Variables

Variable Group	Variable Abbreviation	Question Number	Successful Incidents		Unsuccessful Incidents	
			Mean Differences [a]	Significance p-value	Mean Differences [a]	Significance p-value
Recovery outcome	Repurchase	31	-.650*	.014	.429	.471
	Process	42	-.173	.320	-.324	.284
	Outcome	43	-.413*	.015	.024	.931
	AfLoyalty	44	-.127	.592	.344	.391
Before-recovery severity	BeSerious	10	.279	.302	-.306	.519
	BeCost	11	.118	.693	.205	.591
	BeTime	12	-.117	.654	-.027	.952
	BeConven	13	-.388	.085	-.564	.057
After-recovery severity	AfSerious	34	.567*	.015	.344	.396
	AfCost	35	.394	.099	.199	.675
	AfTime	37	.264	.221	-.234	.525
	AfConven	39	.197	.395	-.504*	.037
Before-failure loyalty	BeTimes	3	-.358	.406	-1.214*	.018
	BeLength	4	.113	.746	-1.480**	.008
	BeLoyal	5	.116	.628	.172	.661
	BeQuality	6	-.001	.993	.231	.563
Time issue	FindLength	15	.042	.862	.360	.418
	StartLength	19	-.293	.291	.863	.185
	EndLength	24	-.009	.975	.815	.199
Interactional justice	Honest	55	-.153	.383	-.138	.715
	Dignity	56	-.135	.429	-.022	.956
	Adequate	57	-.171	.344	-.011	.976
	Treatment	52	-.264	.153	-.038	.922
	Pleasant	50	-.070	.728	.289	.389
Procedural justice	Procedure	51	.016	.928	-.312	.319
	Standard	46	-.200	.294	.259	.523
	ProperTime	48	-.308	.128	-.565	.093
	TimeSpent	49	.413*	.042	-.752	.065
Distributive justice	FairOutcome	53	-.241	.187	-.725*	.044
	ProperOut	54	-.206	.253	-.410	.213

Note: [a] 1-incident minus 2-incident; * p<.05; ** p<0.01

Table 3-5 includes similar information for unsuccessful incidents. Again, all variables have skewness values between -3 and 3, suggesting that each exhibits good normality. Four variables in the unsuccessful incidents have significant mean differences. While the negative t value for after-recovery inconvenience indicates that respondents in the 2-incident process feel less inconvenient after an unsuccessful recovery, the negative value for how many times used the service before failure indicates these respondents are less loyal before failure in unsuccessful incidents. The negative t values for time spent during recovery process and the customer perception of fair recovery outcome suggest that respondents in the 2-incident process feel that they spent less time and received less justice in unsuccessful incidents than those in the 1-incident process.

Since it was found that the three demographic variables of gender, education years, and campus living location are significantly different between the two processes, all demographic variables are treated as covariates in the analysis of covariance (ANCOVA). Again, successful and unsuccessful incidents are analyzed individually, and Table 3-6 shows the analysis results from ANCOVA. Comparing the results of successful incidents in Table 3-6 with those in Table 3-4, we found that the mean difference of after-recovery cost changes from significant to insignificant after controlling the demographic variables. Repurchase, outcome satisfaction, after-recovery serious, and time spent still have significant mean differences at $\alpha = 0.05$. Four variables in unsuccessful incidents exhibit significant mean differences after controlling for covariates, and three of them are the same as those before controlling demographic variables, one different. The mean difference of the time spent variable is significant before controlling demographic

variables, while the mean difference of the length used the service is significant after. The mean differences of the after-recovery inconvenience, the times used the service, and the fair outcome variables are significant regardless whether demographic variables are controlled. These variables have significantly negative mean differences, indicating that respondents in the 2-incident process feel less inconvenient, less loyal, and less justice in unsuccessful recovery incidents than those in the 1-incident process.

Most of the variables with significant mean differences indicate that for the 2-incident process respondents tend to answer negatively, indicating more serious, less satisfaction, loyalty, and justice. However, since it is reasonable that people feel satisfaction, loyalty, and justice similarly (Liao, 2007; Patterson et al., 2006), these mean differences do not suggest strange causal relationships among the variables. However, to pool the results from these two processes, researchers should conduct further analysis to compare the causal relationships among variables. Group comparison techniques proposed by researchers (Byrne, 2006; Rungtusanatham et al., 2008) can be applied in such situations. In this study, the service recovery path model proposed by Weng and his colleagues (2009) is used to test the relationships among several variables and the invariance of the measurement and structural model exists for the 1- and 2-incident processes.

5. Conclusions for Practices

The analyses of response rate, item completion rate, and mean differences indicate that 1- and 2-incident processes do not differ in effectiveness in terms of

response rate and item completion rate. However, the results from these two processes have significant mean differences in several variables. To pool the datasets from these two processes needs further analyses to confirm the significance of their causal relationships among the variables is similar.

In practice, researchers can request 1 or 2 opposite incidents from the respondents and acquire similar response rates and item completion rates. Therefore, researchers should use 2-incident processes to obtain more incidents than the 1-incident processes. However, incentive, provided to students for answering the questions in this study, may increase these rates of 2-incident processes to be the same as those of 1-incident processes. When conducting CIT in different groups of respondents, researchers need to pick appropriate incentive to reach the same level of rates for 2-incident processes. In conclusion, the 1- and 2-incident processes in CIT combination studies perform similarly in effectiveness. Researchers can decide the number of incidents based on their research requirements.

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CONCLUSIONS

This dissertation advances the service recovery research in three dimensions. First, this dissertation investigates the changes and trends of the recovery practices over the past decade, advancing the longitudinal dimension of this topic. Second, focusing on the global business environment, this dissertation establishes a new service recovery model and studies cultural impact on recovery practices. Third, concerning methodology, this dissertation provides suggestions for researchers in selecting the number of incidents in CIT.

Comparing the results from 2000 and 2008, this dissertation finds decreased impact on customer satisfaction and loyalty over time, suggesting that the recovery practice has changed from order winner to order qualifier. Most service companies use service recovery practices in their daily business operations. Thus, companies which do not have recovery practices should consider the factors influencing the chance of a successful recovery and follow the suggestions of this dissertation.

Based on Justice Theory, a new service recovery model is established in this dissertation. This new model suggests two insights on service recovery. First, process and outcome satisfactions are considered separately, providing an explanation for the inclusive results of the service recovery paradox. Second, interactional justice, regarded as service encounter, has a direct impact on the other two justice measures and influences satisfaction indirectly through them. The separation of process and outcome satisfaction as well as procedural and distributive justice explains the inconclusive results of previous

service recovery studies related to justice measures. In addition, the model is tested by both the US and Taiwan datasets and different path significances are found between the two countries. Based on the results from the two countries, Taiwanese customers appear to appreciate interactional and procedural justice and process outcome more, while American customers are more concerned about cost, distributive justice, and outcome satisfaction. These findings provide not only a roadmap for international service companies in designing their recovery practices but also a stepping-stone for future cross-culture research in service recovery.

After investigating the 1- and 2-incident processes, this dissertation finds that the response rates and item completion rates are not significantly different between these two processes. However, the respondents in the 2-incident process are found to answer the questions toward the negative situation, more serious, less satisfaction, less loyalty, and reduced repurchase behavior. Although the variable mean differences are significant, whether the causal relationships among the variables in two processes are different needs further investigation.

In conclusion, this dissertation investigates the service recovery trends, establishes a new service recovery model, compares cultural differences between the US and Taiwan, and analyzes the results from both 1- and 2-incident processes. The contributions of this dissertation to service recovery research are significant. This dissertation also provides suggestions for future service recovery research.

APPENDIX: SURVEY QUESTIONS

This is a survey about SERVICE RECOVERY (Things companies should do when there is a failure in the service delivery process). Think of an incident in which service companies (or the service side of non-service companies) failed to deliver what you expected. After the failure, the company tried to solve the problem.
This survey also tries to measure the dimensions of different cultures. Further, the survey can investigate whether the SERVICE RECOVERY processes are different in different cultures.

1. After the service failure and the company tried to recover from their failure, were you satisfied or not satisfied with their service recovery process?
   Satisfied Not Satisfied

2. Describe the company that was involved (name, type of business, size or organization).

3. How many times had you used the company prior to the service failure?
   0 1 2-4 5-10 11-19 20 or more

4. How long had you been using the company's services when the failure occurred?
   The first time Days Weeks Months Years

5. Prior to the service failure, you would have classified yourself as a loyal customer.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

6. Prior to the service failure, you viewed the company as a provider of a high quality service.
   Strongly Agree Agree Neutral Disagree Strongly Disagree

7. What made you decide to use this company versus another?

   Reputation Personal experience w/company

   Recommendation of friend/family member Advertisement/Sale

   Convenience No other choices available Other

8. Describe the service failure.

9. To the best of your knowledge, did the company have a stated guarantee related to this kind of problem? If yes, describe it.

10. How serious could the failure have been IF no resolution had been attempted?

    Very serious Serious Mildly serious Of minor consequence
    Of no consequence

11. The service failure could have cost me much money IF no resolution had been attempted.

    Strongly Agree Agree NeutralDisagree Strongly Disagree

12. The service failure could have cost me much lost time IF no solution had been attempted.

    Strongly Agree Agree NeutralDisagree Strongly Disagree

13. The service failure could have caused me much inconvenience IF no resolution had been attempted.

    Strongly Agree Agree NeutralDisagree Strongly Disagree

14. How did the company find out that you were not satisfied with the service?

    The company figured it out and notified me before I complained (in writing, in person, by phone, by email)

    The company asked (in writing, in person, by phone, by email) and I responded (in writing, in person, by phone, by email, leave message on company website)

The company didn't ask, but I told them (in writing, in person, by phone, by email, leave message on company website)

Other

15. How long after the failure occurred did the company find out about it?

Seconds Minutes Hours Days Weeks Months Years

16. Once the company found out about the problem, did you receive an apology?

Yes (in writing, in person, by phone, by email) No

17. If you received an apology, the apology was sincere.

Strongly Agree Agree Neutral Disagree Strongly Disagree

18. Please explain their apology.

19. How long after the company found out about the failure did the solution process begin?

Seconds Minutes Hours Days Weeks Months Years

20. With whom did you originally discuss the problem (or write to)?

21. Did that person solve or attempt to solve the problem?

Yes No

22. Did that person appear to have the authority to solve the problem?

Yes No

23. Who was the final person you dealt with during the problem resolution process?

The person described above A manager or supervisor The business owner Other

24. How long did it take the company to finish the whole solution process?

Seconds Minutes Hours Days Weeks Months Years

25. How many service representatives did you have contact with during the entire solution process?

One Two Three Four Five or more

26. Describe the final solution to the problem.

27. The company solved the problem to your satisfaction.

Strongly Agree Agree Neutral Disagree Strongly Disagree

28. The company solved the problem in a manner that was fair to you.

Strongly Agree Agree Neutral Disagree Strongly Disagree

29. The company went beyond a "fair fix" to the problem by including a little (or a lot) extra for your trouble.

Yes No

30. If yes, describe the "little extra."

31. How likely are you to do business with the company again after the failure?

I already have gone back to the company Very likely Somewhat likely Somewhat unlikely Very unlikely I am certain I will never return

32. Explain how the company could have done a better job solving the problem.

33. After the solution process, you viewed the company as a provider of a high quality service.

Strongly Agree Agree Neutral Disagree Strongly Disagree

34. After the solution process, how serious was the service failure?

Very serious Serious Mildly serious Of minor consequence Of no consequence

35. After the solution process, the service failure actually cost me much money.

Strongly Agree Agree NeutralDisagree Strongly Disagree

36. Estimate and describe the actual cost of the failure.

37. After the solution process, the service failure actually caused me much lost time.

Strongly Agree Agree NeutralDisagree Strongly Disagree

38. Estimate and describe the actual time you lost because of the failure.

39. After the solution process, the service failure actually caused me much inconvenience.

Strongly Agree Agree NeutralDisagree Strongly Disagree

40. Estimate and describe the actual inconvenience you encountered because of the failure.

41. Describe (who, what, when, how) the very last time that you contacted with the company about this failure.

42. Without considering the outcome, how satisfied were you with the solution PROCESS?

Very satisfied Satisfied Normal Dissatisfied Very dissatisfied

43. How satisfied were you with the OUTCOME of the solution process?

Very satisfied Satisfied Normal Dissatisfied Very dissatisfied

Do you agree or disagree the following statements?

Strongly Agree Agree NeutralDisagree Strongly Disagree

44. After the service failure and the solution process you would call yourself a loyal customer.
45. Your opinion of the company has improved because of the service failure, the solution process and the outcome.
46. Resolving service failures appears to be the company's standard procedure.
47. This service failure was caused by the company.
48. The time to resolve the service failure was appropriate.
49. I spent a lot of time during this recovery process.
50. The service recovery process was a pleasant experience.
51. The procedures used in response to the service failure were fair.
52. The personal treatment you received during the solution process was fair.
53. The outcomes of the solution process were fair.
54. The outcomes of the solution process were appropriate.
55. The company was open and honest with me during the solution process.
56. I was treated with dignity and respect during the solution process.
57. The decisions made during the solution process were adequately explained.

INTERNATIONAL QUESTIONNAIRE (VSM 08)

Please think of an ideal job, disregarding your present job, if you have one. In choosing an ideal job, how important would it be to you to ... (please circle one answer in each line across):

Questions	Of utmost importance	Very important	Of moderate importance	Of little importance	Of very little or no importance
1. Have sufficient time for your personal or home life	1	2	3	4	5
2. Have a boss (direct superior) you can respect	1	2	3	4	5
3. Get recognition for good performance	1	2	3	4	5
4. Have security of employment	1	2	3	4	5
5. Have pleasant people to work with	1	2	3	4	5
6. Do work that is interesting	1	2	3	4	5
7. Be consulted by your boss in decisions involving your work	1	2	3	4	5
8. Live in a desirable area	1	2	3	4	5
9. Have a job that is respected by your family and friends	1	2	3	4	5
10. Have chances for promotion	1	2	3	4	5

In your private life, how important is each of the following to you: (please circle one answer in each line across):

Questions	Of utmost importance	Very important	Of moderate importance	Of little importance	Of very little or no importance
11. Keeping time free for fun	1	2	3	4	5
12. Moderation: Having few desires	1	2	3	4	5
13. Being generous to other people	1	2	3	4	5
14. Modesty: Looking small, not big	1	2	3	4	5

15. If there is something expensive you really want to buy but you do not have enough money, what do you do?

    1. always save before buying
    2. usually save first
    3. sometimes save, sometimes borrow to buy
    4. usually borrow and pay off later
    5. always buy now, pay off later

16. How often do you feel nervous or tense?

    1. always
    2. usually
    3. sometimes
    4. seldom
    5. never

17. Are you a happy person ?

    1. always
    2. usually

3. sometimes

4. seldom

5. never

18. Are you the same person at work (or at school if you're a student) and at home?

1. quite the same

2. mostly the same

3. don't know

4. mostly different

5. quite different

19. Do other people or circumstances ever prevent you from doing what you really want to?

1. yes, always

2. yes, usually

3. sometimes

4. no, seldom

5. no, never

20 . All in all, how would you describe your state of health these days?

1. very good

2. good

3. fair

4. poor

5. very poor

21. How important is religion in your life ?

1. of utmost importance

2. very important

3. of moderate importance

4. of little importance

5. of no importance

22. How proud are you to be a citizen of your country?

1. not proud at all
2. not very proud
3. somewhat proud
4. fairly proud
5. very proud

23. How often, in your experience, are subordinates afraid to contradict their boss (or students their teacher?)

1. never
2. seldom
3. sometimes
4. usually
5. always

To what extent do you agree or disagree with each of the following statements? (please circle one answer in each line across):

1 = strongly agree

2 = agree

3 = undecided

4 = disagree

5 = strongly disagree

Questions	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
24. One can be a good manager without having a precise answer to every question that a subordinate may raise about his or her work	1	2	3	4	5
25. Persistent efforts are the surest way to results	1	2	3	4	5
26. An organization structure in which certain subordinates have two bosses should be avoided at all cost	1	2	3	4	5
27. A company's or organization's rules should not be broken – not even when the employee thinks breaking the rule would be in the organization's best interest	1	2	3	4	5
28. We should honor our heroes from the past	1	2	3	4	5

Some information about yourself (for statistical purposes):

29. Are you:

    1. male

    2. female

30. How old are you?

1. Under 17
2. 18
3. 19
4. 20
5. 21
6. 22
7. 23
8. 24 or over

31. How many years of formal school education (or their equivalent) did you complete (starting with primary school)?

1. 10 years or less
2. 11 years
3. 12 years
4. 13 years
5. 14 years
6. 15 years
7. 16 years
8. 17 years
9. 18 years or over

32. If you have or have had a paid job, what kind of job is it/was it?

1. No paid job (includes full-time students)

2. Unskilled or semi-skilled manual worker

3. Generally trained office worker or secretary

4. Vocationally trained craftsperson, technician, IT-specialist, nurse, artist or equivalent

5. Academically trained professional or equivalent (but not a manager of people)

6. Manager of one or more subordinates (non-managers)

7. Manager of one or more managers

33. Where do you live?

1. On campus

2. Off-campus with parents/family

3. Off-campus by yourself

4. Off-campus with roommate(s)

34. What is your student status?

1. In-state

2. Out-of-state

3. International

35. How many years have you been in America? (Only for International Students)

_____

36. What is your nationality?

37. What was your nationality at birth (if different)?

Suggestions and Future Projects

38. If your instructor provides extra credit, please provide your Clemson user name (This is the ONLY information sent to your instructor with the class and section numbers you provide below):

39. Your class number (e.g., MGT 390):

40. Your section number (e.g., Sec. 301):

41. Please provide any suggestions and questions related to this survey.

42. Do you want to be notified of future projects related to this survey?
    1. Yes
    2. No

43. If yes, please provide your email address.

Thank you very much for your participation!